

guidance.<sup>11</sup> This guidance is intended to enhance the integrity and credibility of the NEPA process and the information upon which it relies.

CEQ provides several broad recommendations in Section II, below, to help improve agency consideration of mitigation in EISs and EAs. Agencies should not commit to mitigation measures considered in an EIS or EA absent the authority or expectation of resources to ensure that the mitigation is performed. In the decision documents concluding their environmental reviews, agencies should clearly identify any mitigation measures adopted as agency commitments or otherwise relied upon (to the extent consistent with agency authority or other legal authority), so as to ensure the integrity of the NEPA process and allow for greater transparency.

Section III emphasizes that agencies should establish implementation plans based on the importance of the project and its projected effects. Agencies should create new, or strengthen existing, monitoring to ensure that mitigation commitments are implemented. Agencies should also use effectiveness monitoring to learn if the mitigation is providing the benefits predicted. Importantly, agencies should encourage public participation and accountability through proactive disclosure of, and provision of access to, agencies' mitigation commitments as well as mitigation monitoring reports and related documents.

Although the recommendations in this guidance are broad in nature, agencies should establish, in their NEPA implementing procedures and/or guidance, specific procedures that create systematic accountability and the mechanisms to accomplish these goals.<sup>12</sup> This guidance is intended to assist agencies with the development and review of their NEPA procedures, by specifically recommending:

- How to ensure that mitigation commitments are implemented;
- How to monitor the effectiveness of mitigation commitments;
- How to remedy failed mitigation; and
- How to involve the public in mitigation planning.

<sup>11</sup> This previous guidance is found in CEQ, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," 46 FR 18,026, Mar. 23, 1981, available at <http://ceq.eh.doe.gov/nepa/regs/40/40P1.htm> (suggesting that the existence of mitigation measures developed during the scoping or EA stages "does not obviate the need for an EIS").

<sup>12</sup> 40 CFR 1507.3 (requiring agencies to issue, and continually review, policies and procedures to implement NEPA in conformity with NEPA and CEQ Regulations).

Finally, to assist agencies in the development of their NEPA implementing procedures, an overview of relevant portions of the Department of the Army NEPA regulations is appended to this guidance as an example for agencies to consider when incorporating the recommendations of this guidance as requirements in their NEPA programs and procedures.<sup>13</sup>

### I. The Importance of Mitigation Under NEPA

Mitigation is an important mechanism Federal agencies can use to minimize the potential adverse environmental impacts associated with their actions. As described in the CEQ Regulations, agencies can use mitigation to reduce environmental impacts in several ways. Mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action;
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.<sup>14</sup>

Federal agencies typically develop mitigation as a component of a proposed action, or as a measure considered in the course of the NEPA review conducted to support agency decisionmaking processes, or both. In developing mitigation, agencies necessarily and appropriately rely upon the expertise and experience of their professional staff to assess mitigation needs, develop mitigation plans, and oversee mitigation implementation. Agencies may also rely on outside resources and experts for information about the ecosystem functions and values to be protected or restored by mitigation, to ensure that mitigation has the desired effects and to develop appropriate monitoring strategies. Any outside parties consulted should be neutral parties without a financial interest in implementing the mitigation and monitoring plans, and should have expert knowledge, training, and experience relevant to the resources potentially affected by the actions and—if possible—the potential effects from

<sup>13</sup> See *id.*; see also *id.* § 1507.2 (requiring agencies to have personnel and other resources available to implement NEPA reviews and meet their NEPA responsibilities).

<sup>14</sup> *Id.* § 1508.20 (defining mitigation to include these activities).

similar actions.<sup>15</sup> Further, when agencies delegate responsibility for preparing NEPA analyses and documentation, or when other entities (such as applicants) assume such responsibility, CEQ recommends that any experts employed to develop mitigation and monitoring should have the kind of expert knowledge, training, and experience described above.

The sections below clarify practices Federal agencies should use when they employ mitigation in three different contexts: As components of project design; as mitigation alternatives considered in an EA or an EIS and adopted in related decision documents; and as measures identified and committed to in an EA as necessary to support a mitigated FONSI. CEQ encourages agencies to commit to mitigation to achieve environmentally preferred outcomes, particularly when addressing unavoidable adverse environmental impacts. Agencies should not commit to mitigation, however, unless they have sufficient legal authorities and expect there will be necessary resources available to perform or ensure the performance of the mitigation. The agency's own underlying authority may provide the basis for its commitment to implement and monitor the mitigation. Alternatively, the authority for the mitigation may derive from legal requirements that are enforced by other Federal, state, or local government entities (e.g., air or water permits administered by local or state agencies).

#### A. Mitigation Incorporated Into Project Design

Many Federal agencies rely on mitigation to reduce adverse environmental impacts as part of the planning process for a project, incorporating mitigation as integral components of a proposed project design before making a determination about the significance of the project's environmental impacts.<sup>16</sup> Such mitigation can lead to an environmentally preferred outcome and in some cases reduce the projected impacts of agency actions to below a threshold of significance. An example of mitigation measures that are typically included as part of the proposed action are agency standardized best

<sup>15</sup> See *id.* § 1506.5 (providing that agencies are responsible for the accuracy of environmental information submitted by applicants for use in EISs and EAs, and requiring contractors selected to prepare EISs to execute disclosure statement specifying that they have no financial or other interest in the outcome of the project).

<sup>16</sup> CEQ NEPA Task Force, "Modernizing NEPA Implementation" at 69.

management practices such as those developed to prevent storm water runoff or fugitive dust emissions at a construction site.

Mitigation measures included in the project design are integral components of the proposed action, and therefore should be clearly described as part of the proposed action that the agency will perform or require to be performed. Consequently, the agency can address mitigation early in the decisionmaking process and potentially conduct a less extensive level of NEPA review.

#### *B. Mitigation Alternatives Considered in Environmental Assessments and Environmental Impact Statements*

Agencies are required, under NEPA, to study, develop, and describe appropriate alternatives when preparing EAs and EISs.<sup>17</sup> The CEQ Regulations specifically identify procedures agencies must follow when developing and considering mitigation alternatives when preparing an EIS. When an agency prepares an EIS, it must include mitigation measures (not already included in the proposed action or alternatives) among the alternatives compared in the EIS.<sup>18</sup> Each EIS must contain a section analyzing the environmental consequences of the proposed action and its alternatives, including “[m]eans to mitigate adverse environmental impacts.”<sup>19</sup>

When a Federal agency identifies a mitigation alternative in an EA or an EIS, it may commit to implement that mitigation to achieve an environmentally-preferable outcome. Agencies should not commit to mitigation measures considered and analyzed in an EIS or EA if there are insufficient legal authorities, or it is not reasonable to foresee the availability of sufficient resources, to perform or ensure the performance of the mitigation. Furthermore, the decision document following the EA should—and a Record of Decision (ROD) must—identify those mitigation measures that the agency is adopting and committing to implement, including any monitoring

and enforcement program applicable to such mitigation commitments.<sup>20</sup>

#### *C. Mitigation Commitments Analyzed in Environmental Assessments To Support a Mitigated FONSI*

When preparing an EA, many agencies develop and consider committing to mitigation measures to avoid, minimize, rectify, reduce, or compensate for potentially significant adverse environmental impacts that would otherwise require full review in an EIS. CEQ recognizes the appropriateness, value, and efficacy of providing for mitigation to reduce the significance of environmental impacts. Consequently, when such mitigation measures are available and an agency commits to perform or ensure the performance of them, then these mitigation commitments can be used to support a FONSI, allowing the agency to conclude the NEPA process and proceed with its action without preparing an EIS.<sup>21</sup> An agency should not commit to mitigation measures necessary for a mitigated FONSI if there are insufficient legal authorities, or it is not reasonable to foresee the availability of sufficient resources, to perform or ensure the performance of the mitigation.<sup>22</sup>

Mitigation commitments needed to lower the level of impacts so that they are not significant should be clearly described in the mitigated FONSI document and in any other relevant decision documents related to the proposed action. Agencies must provide for appropriate public involvement during the development of the EA and FONSI.<sup>23</sup> Furthermore, in addition to

<sup>20</sup> *Id.* § 1505.2(c) (providing that a record of decision must state whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not; and providing that a monitoring and enforcement program must be adopted and summarized where applicable for any mitigation).

<sup>21</sup> This guidance approves of the use of the “mitigated FONSI” when the NEPA process results in enforceable mitigation measures. It thereby amends and supplements previously issued CEQ guidance that suggested that the existence of mitigation measures developed during the scoping or EA stages “does not obviate the need for an EIS.” See CEQ, “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations,” 46 FR 18,026, Mar. 23, 1981, available at <http://ceq.eh.doe.gov/nepa/regs/40/40P1.htm>.

<sup>22</sup> When agencies consider and decide on an alternative outside their jurisdiction (as discussed in 40 CFR 1502.14(c)), they should identify the authority for the mitigation and consider the consequences of it not being implemented.

<sup>23</sup> 40 CFR 1501.4(b) (requiring agencies to involve environmental agencies, applicants, and the public, to the extent practicable); *id.* § 1501.4(e)(1) (requiring agencies to make FONSIIs available to the affected public as specified in § 1506.6); *id.* § 1501.4(e)(2) (requiring agencies to make FONSIIs available for public review for thirty days before making any final determination on whether to prepare an EIS or proceed with an action when the

those situations where a 30-day public review of the FONSI is required.<sup>24</sup> agencies should make the EA and FONSI available to the public (e.g., by posting them on an agency Web site). Providing the public with clear information about agencies’ mitigation commitments helps ensure the value and integrity of the NEPA process.

#### **II. Ensuring That Mitigation Commitments Are Implemented**

Federal agencies should take steps to ensure that mitigation commitments are actually implemented. Consistent with their authority, agencies should establish internal processes to ensure that mitigation commitments made on the basis of any NEPA analysis are carefully documented and that relevant funding, permitting, or other agency approvals and decisions are made conditional on performance of mitigation commitments.

Agency NEPA implementing procedures should require clear documentation of mitigation commitments considered in EAs and EISs prepared during the NEPA process and adopted in their decision documents. Agencies should ensure that the expertise and professional judgment applied in determining the appropriate mitigation commitments are described in the EA or EIS, and that the NEPA analysis considers when and how those mitigation commitments will be implemented.

Agencies should clearly identify commitments to mitigation measures designed to achieve environmentally preferable outcomes in their decision documents. They should also identify mitigation commitments necessary to reduce impacts, where appropriate, to a level necessary for a mitigated FONSI. In both cases, mitigation commitments should be carefully specified in terms of measurable performance standards or expected results, so as to establish clear performance expectations.<sup>25</sup> The agency

proposed action is, or is closely similar to, one which normally requires the preparation of an EIS under agency NEPA implementing procedures, or when the nature of the proposed action is one without precedent); *id.* § 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>24</sup> *Id.* § 1501.4(e)(2).

<sup>25</sup> In 2001, the Committee on Mitigating Wetland Losses, through the National Research Council (NRC), conducted a nationwide study evaluating compensatory mitigation, focusing on whether the process is achieving the overall goal of “restoring and maintaining the quality of the nation’s waters.” NRC Committee on Mitigating Wetland Losses, “Compensating for Wetland Losses Under the Clean Water Act” 2 (2001). The study’s recommendations were incorporated into the 2008 Final Compensatory Mitigation Rule promulgated jointly

<sup>17</sup> 42 U.S.C. 4332(2)(C) (mandating that agencies’ detailed statements must include alternatives to the proposed action); *Id.* § 4332(E) (requiring agencies to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources).

<sup>18</sup> 40 CFR 1502.14(f) (listing mitigation measures as one of the required components of the alternatives included in an EIS); *id.* § 1508.25(b)(3) (defining the “scope” of an EIS to include mitigation measures).

<sup>19</sup> *Id.* § 1502.16(h).



should also specify the timeframe for the agency action and the mitigation measures in its decision documents, to ensure that the intended start date and duration of the mitigation commitment is clear. When an agency funds, permits, or otherwise approves actions, it should also exercise its available authorities to ensure implementation of any mitigation commitments by including appropriate conditions on the relevant grants, permits, or approvals.

CEQ views funding for implementation of mitigation commitments as critical to ensuring informed decisionmaking. For mitigation commitments that agencies will implement directly, CEQ recognizes that it may not be possible to identify funds from future budgets; however, a commitment to seek funding is considered essential and if it is reasonably foreseeable that funding for implementation of mitigation may be unavailable at any time during the life of the project, the agency should disclose in the EA or EIS the possible lack of funding and assess the resultant environmental effects. If the agency has disclosed and assessed the lack of funding, then unless the mitigation is essential to a mitigated FONSI or necessary to comply with another legal requirement, the action could proceed. If the agency committing to implementing mitigation has not disclosed and assessed the lack of funding, and the necessary funding later becomes unavailable, then the agency should not move forward with the proposed action until funding becomes available or the lack of funding is appropriately assessed (*see* Section III, below).

#### A. Establishing a Mitigation Monitoring Program

Federal agencies must consider reasonably foreseeable future impacts and conditions in a constantly evolving environment. Decisionmakers will be better able to adapt to changing circumstances by creating a sound mitigation implementation plan and through ongoing monitoring of environmental impacts and their mitigation. Monitoring can improve the quality of overall agency decisionmaking by providing feedback on the effectiveness of mitigation techniques. A comprehensive approach to mitigation planning, implementation, and monitoring will therefore help agencies realize opportunities for

reducing environmental impacts through mitigation, advancing the integrity of the entire NEPA process. These approaches also serve NEPA's goals of ensuring transparency and openness by making relevant and useful environmental information available to decisionmakers and the public.<sup>26</sup>

Adaptive management can help an agency take corrective action if mitigation commitments originally made in NEPA and decision documents fail to achieve projected environmental outcomes and there is remaining federal action. Agencies can, in their NEPA reviews, establish and analyze mitigation measures that are projected to result in the desired environmental outcomes, and can then identify those mitigation principles or measures that it would apply in the event the initial mitigation commitments are not implemented or effective. Such adaptive management techniques can be advantageous to both the environment and the agency's project goals.<sup>27</sup> Agencies can also, short of adaptive management, analyze specific mitigation alternatives that could take the place of mitigation commitments in the event the commitment is not implemented or effective.

Monitoring is fundamental for ensuring the implementation and effectiveness of mitigation commitments, meeting legal and permitting requirements, and identifying trends and possible means for improvement. Under NEPA, a Federal agency has a continuing duty to ensure that new information about the environmental impact of its proposed actions is taken into account, and that the NEPA review is supplemented when significant new circumstances or information arise that are relevant to environmental concerns and bear on the proposed action or its impacts.<sup>28</sup> For agency decisions based on an EIS, the CEQ Regulations explicitly require that "a monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation."<sup>29</sup> In addition, the CEQ Regulations state that agencies may "provide for monitoring to assure that their decisions are carried out and should do so in important cases."<sup>30</sup> Accordingly, an agency should also commit to mitigation monitoring in

important cases when relying upon an EA and mitigated FONSI. Monitoring is essential in those important cases where the mitigation is necessary to support a FONSI and thus is part of the justification for the agency's determination not to prepare an EIS.

Agencies are expected to apply professional judgment and the rule of reason when identifying those cases that are important and warrant monitoring, and when determining the type and extent of monitoring they will use to check on the progress made in implementing mitigation commitments as well as their effectiveness. In cases that are less important, the agency should exercise its discretion to determine what level of monitoring, if any, is appropriate. The following are examples of factors that agencies should consider to determine importance:

- Legal requirements of statutes, regulations, or permits;
- Human health and safety;
- Protected resources (e.g., parklands, threatened or endangered species, cultural or historic sites) and the proposed action's impacts on them;
- Degree of public interest in the resource or public debate over the effects of the proposed action and any reasonable mitigation alternatives on the resource; and
- Level of intensity of projected impacts.

Once an agency determines that it will provide for monitoring in a particular case, monitoring plans and programs should be described or incorporated by reference in the agency's decision documents.<sup>31</sup> Agencies have discretion, within the scope of their authority, to select an appropriate form and method for monitoring, but they should identify the monitoring area and establish the appropriate monitoring system.<sup>32</sup> The form and method of monitoring can be informed by an agency's past monitoring plans and programs that tracked impacts on similar resources, as well as plans and programs used by other agencies or entities, particularly those with an interest in the resource being monitored. For mitigation commitments that warrant rigorous oversight, an Environmental Management System (EMS), or other

<sup>26</sup> 40 CFR 1500.1(b).

<sup>27</sup> *See* CEQ NEPA Task Force, "Modernizing NEPA Implementation" at 44.

<sup>28</sup> 40 CFR 1502.9(c) (requiring supplementation of EISs when there are substantial changes to the proposed action, or significant new information or circumstances arise that are relevant to the environmental effects of the proposed action).

<sup>29</sup> *Id.* § 1505.2(c).

<sup>30</sup> *Id.* § 1505.3.

<sup>31</sup> The mitigation plan and program should be described to the extent possible based on available and reasonably foreseeable information in cases where the NEPA analysis and documentation are completed prior to final design of a proposed project.

<sup>32</sup> The Department of the Army regulations provide an example of this approach. *See* 32 CFR part 651 App. C. These regulations are summarized in the Appendix to this guidance.

by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. *See* U.S. Army Corps of Engineers & U.S. Environmental Protection Agency, "Compensatory Mitigation for Losses of Aquatic Resources," 73 FR 19,594, Apr. 10, 2008.

data or management system could serve as a useful way to integrate monitoring efforts effectively.<sup>33</sup> Other possible monitoring methods include agency-specific environmental monitoring, compliance assessment, and auditing systems. For activities involving third parties (e.g., permittees or grantees), it may be appropriate to require the third party to perform the monitoring as long as a clear accountability and oversight framework is established. The monitoring program should be implemented together with a review process and a system for reporting results.

Regardless of the method chosen, agencies should ensure that the monitoring program tracks whether mitigation commitments are being performed as described in the NEPA and related decision documents (i.e., implementation monitoring), and whether the mitigation effort is producing the expected outcomes and resulting environmental effects (i.e., effectiveness monitoring). Agencies should also ensure that their mitigation monitoring procedures appropriately provide for public involvement. These recommendations are explained in more detail below.

#### *B. Monitoring Mitigation Implementation*

A successful monitoring program will track the implementation of mitigation commitments to determine whether they are being performed as described in the NEPA documents and related decision documents. The responsibility for developing an implementation monitoring program depends in large part upon who will actually perform the mitigation—the lead Federal agency or cooperating agency; the applicant, grantee, or permit holder; another responsible entity or cooperative non-

Federal partner; or a combination of these. The lead agency should ensure that information about responsible parties, mitigation requirements, as well as any appropriate enforcement clauses are included in documents such as authorizations, agreements, permits, financial assistance awards, or contracts.<sup>34</sup> Ultimate monitoring responsibility rests with the lead Federal agency or agencies to assure that monitoring is occurring when needed and that results are being properly considered. The project's lead agency can share monitoring responsibility with joint lead or cooperating agencies or other entities, such as applicants or grantees. The responsibility should be clearly described in the NEPA documents or associated decision documents, or related documents describing and establishing the monitoring requirements or expectations.

#### *C. Monitoring the Effectiveness of Mitigation*

Effectiveness monitoring tracks the success of a mitigation effort in achieving expected outcomes and environmental effects. Completing environmental data collection and analyses prior to project implementation provides an understanding of the baseline conditions for each potentially affected resource for reference when determining whether the predicted efficacy of mitigation commitments is being achieved. Agencies can rely on agency staff and outside experts familiar with the predicted environmental impacts to develop the means to monitor mitigation effectiveness, in the same way that they can rely on agency and outside experts to develop and evaluate the effectiveness of mitigation (see Section I, above).

When monitoring mitigation, agencies should consider drawing on sources of information available from the agency, from other Federal agencies, and from state, local, and tribal agencies, as well as from non-governmental sources such as local organizations, academic institutions, and non-governmental organizations. Agencies should especially consider working with agencies responsible for overseeing land management and impacts to specific resources. For example, agencies could consult with the U.S. Fish and Wildlife and National Marine Fisheries Services (for information to evaluate potential impacts to threatened and endangered

species) and with State Historic Preservation Officers (for information to evaluate potential impacts to historic structures).

#### *D. The Role of the Public*

Public involvement is a key procedural requirement of the NEPA review process, and should be fully provided for in the development of mitigation and monitoring procedures.<sup>35</sup> Agencies are also encouraged, as a matter of transparency and accountability, to consider including public involvement components in their mitigation monitoring programs. The agencies' experience and professional judgment are key to determining the appropriate level of public involvement. In addition to advancing accountability and transparency, public involvement may provide insight or perspective for improving mitigation activities and monitoring. The public may also assist with actual monitoring through public-private partnership programs.

Agencies should provide for public access to mitigation monitoring information consistent with NEPA and the Freedom of Information Act (FOIA).<sup>36</sup> NEPA and the CEQ Regulations incorporate the FOIA by reference to require agencies to provide public access to releasable documents related to EISs, which may include documents regarding mitigation monitoring and enforcement.<sup>37</sup> The CEQ Regulations also require agencies to involve the public in the EA preparation process to the extent practicable and in certain cases to make a FONSI available for public review before making its final determination on whether it will prepare an EIS or proceed with the action.<sup>38</sup> Consequently, agencies should

<sup>35</sup> 40 CFR 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>36</sup> 5 U.S.C. 552.

<sup>37</sup> 42 U.S.C. 4332(2)(C) (requiring Federal agencies to make EISs available to the public as provided by the FOIA); 40 CFR 1506.6(f) (requiring agencies to make EISs, comments received, and any underlying documents available to the public pursuant to the provisions of the FOIA without regard to the exclusion for interagency memoranda where such memoranda transmit comments of Federal agencies on the environmental impact of the proposed action).

<sup>38</sup> 40 CFR 1501.4(b) (requiring agencies to involve environmental agencies, applicants, and the public, to the extent practicable); *id.* § 1501.4(e)(1) (requiring agencies to make FONSI available to the affected public as specified in § 1506.6); *id.* § 1501.4(e)(2) (requiring agencies to make a FONSI available for public review for thirty days before making its final determination on whether it will prepare an EIS or proceed with the action when the nature of the proposed action is, or is similar to, an action which normally requires the preparation of an EIS); *id.* § 1506.6 (requiring agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures).

<sup>33</sup> An EMS provides a systematic framework for a Federal agency to monitor and continually improve its environmental performance through audits, evaluations of legal and other requirements, and management reviews. The potential for EMS to support NEPA work is further addressed in CEQ, "Aligning National Environmental Policy Act Processes with Environmental Management Systems" 4 (2007) available at [ceq.hss.doe.gov/nepa/nepapubs/Aligning\\_NEPA\\_Processes\\_with\\_Environmental\\_Management\\_Systems\\_2007.pdf](http://ceq.hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf) (discussing the use of EMSs to track implementation and monitoring of mitigation). In 2001, the Department of the Army announced that it would implement a recognized environmental management standard, ISO 14001, across Army installations. ISO 14001 represents a standardized system to plan, track, and monitor environmental performance within the agency's operations. To learn more about how EMS implementation has resulted in an effective EMS for monitoring purposes at an Army installation, see the Sustainability Web site for the Army's Fort Lewis installation, available at [sustainablefortlewis.army.mil](http://sustainablefortlewis.army.mil).

<sup>34</sup> Such enforcement clauses, including appropriate penalty clauses, should be developed as allowable under the applicable statutory and regulatory authorities.



involve the public when preparing EAs and mitigated FONSIs.<sup>39</sup> NEPA further requires all Federal agencies to make information useful for restoring, maintaining, and enhancing the quality of the environment available to States, counties, municipalities, institutions, and individuals.<sup>40</sup> This requirement can include information on mitigation and mitigation monitoring.

Beyond these requirements, agencies are encouraged to make proactive, discretionary release of mitigation monitoring reports and other supporting documents, and to make responses to public inquiries regarding mitigation monitoring readily available to the public through online or print media. This recommendation is consistent with the President's Memorandum on Transparency and Open Government directing agencies to take affirmative steps to make information public without waiting for specific requests for information.<sup>41</sup> The Open Government Directive, issued by the Office of Management and Budget in accordance with the President's Memorandum, further directs agencies to use their web sites and information technology capabilities to disseminate, to the maximum extent practicable, useful information under FOIA, so as to promote transparency and accountability.<sup>42</sup>

Agencies should exercise their judgment to ensure that the methods and media used to provide mitigation and monitoring information are commensurate with the importance of the action and the resources at issue, taking into account any risks of harm to affected resources. In some cases, agencies may need to balance competing privacy or confidentiality concerns (e.g., protecting confidential business information or the location of sacred sites) with the benefits of public disclosure.

### III. Remedying Ineffective or Non-Implemented Mitigation

Through careful monitoring, agencies may discover that mitigation commitments have not been implemented, or have not had the

environmental results predicted in the NEPA and decision documents. Agencies, having committed to mitigation, should work to remedy such inadequacies. It is an agency's underlying authority or other legal authority that provides the basis for the commitment to implement mitigation and monitor its effectiveness. As discussed in Section I, agencies should not commit to mitigation considered in an EIS or EA unless there are sufficient legal authorities and they expect the resources to be available to perform or ensure the performance of the mitigation. In some cases, as discussed in Section II, agencies may exercise their authority to make relevant funding, permitting, or other agency approvals and decisions conditional on the performance of mitigation commitments by third parties. It follows that an agency must rely on its underlying authority and available resources to take remedial steps. Agencies should consider taking remedial steps as long as there remains a pending Federal decision regarding the project or proposed action. Agencies may also exercise their legal authority to enforce conditions placed on funding, grants, permits, or other approvals.

If a mitigation commitment is simply not undertaken or fails to mitigate the environmental effects as predicted, the responsible agency should further consider whether it is necessary to prepare supplemental NEPA analysis and documentation.<sup>43</sup> The agency determination would be based upon its expertise and judgment regarding environmental consequences. Much will depend upon the agency's determination as to what, if any, portions of the Federal action remain and what opportunities remain to address the effects of the mitigation failure. In cases where an EIS or a supplementary EA or EIS is required, the agency must avoid actions that would have adverse environmental impacts and limit its choice of reasonable alternatives during the preparation of an EIS.<sup>44</sup>

In cases where there is no remaining agency action to be taken, and the mitigation has not been fully implemented or has not been as

effective as predicted, it may not be appropriate to supplement the original NEPA analysis and documentation. However, it would be appropriate for future NEPA analyses of similar proposed actions and relevant programs to consider past experience and address the potential for environmental consequences as a result of mitigation failure. This would ensure that the assumed environmental baselines reflect true conditions, and that similar mitigation is not relied on in subsequent decisions without more robust provisions for adaptive management or analysis of mitigation alternatives that can be applied in the event of mitigation failure.

### IV. Conclusion

This guidance is intended to assist Federal agencies with the development of their NEPA procedures, guidance, and regulations; foster the appropriate use of Findings of No Significant Impact; and ensure that mitigation commitments are appropriately and effectively documented, implemented, and monitored. The guidance also provides Federal agencies with recommended actions in circumstances where mitigation is not implemented or fails to have the predicted effect. Questions regarding this guidance should be directed to the CEQ Associate Director for NEPA Oversight.

### Appendix

#### *Case Study: Existing Agency Mitigation Regulations & Guidance*

A number of agencies have already taken actions to improve their use of mitigation and their monitoring of mitigation commitments undertaken as part of their NEPA processes. For example, the Department of the Army has promulgated regulations implementing NEPA for military installations and programs that include a monitoring and implementation component.<sup>45</sup> These NEPA implementing procedures are notable for their comprehensive approach to ensuring that mitigation proposed in the NEPA review process is completed and monitored for effectiveness. These procedures are described in detail below to illustrate one approach agencies can use to meet the goals of this Guidance.

#### *a. Mitigation Planning*

Consistent with existing CEQ guidelines, the Army's NEPA implementing regulations place significant emphasis on the planning and implementation of mitigation

<sup>39</sup> *Id.* § 1501.4.

<sup>40</sup> 42 U.S.C. 4332(2)(G).

<sup>41</sup> Presidential Memorandum for Heads of Executive Departments and Agencies Concerning the Freedom of Information Act, 74 FR 4,683, Jan. 21, 2009; accord DOJ, Memorandum for Heads of Executive Departments and Agencies Concerning the Freedom of Information Act (Mar. 19, 2009), available at <http://www.usdoj.gov/ag/foia-memo-march2009.pdf>.

<sup>42</sup> Office of Mgmt. & Budget, Executive Office of the President, *Open Government Directive*, (Dec. 8, 2009), available at <http://www.whitehouse.gov/open/documents/open-government-directive>.

<sup>43</sup> 40 CFR 1502.9(c) (requiring an agency to prepare supplements to draft or final EISs if the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts).

<sup>44</sup> *Id.* § 1506.1(a) (providing that until an agency issues a Record of Decision, no action concerning the proposal may be taken that would have an adverse environmental impact or limit the choice of reasonable alternatives).

<sup>45</sup> The Department of the Army promulgated its NEPA implementing procedures as a regulation.

throughout the environmental analysis process. The first step of mitigation planning is to seek to avoid or minimize harm.<sup>46</sup> When the analysis proceeds to an EA or EIS, however, the Army regulation requires that any mitigation measures be “clearly assessed and those selected for implementation will be identified in the [FONSI] or the ROD,” and that “[t]he proponent must implement those identified mitigations, because they are commitments made as part of the Army decision.”<sup>47</sup> This is notable as this mitigation is a binding commitment documented in the agency NEPA decision. In addition, the adoption of mitigation that reduces environmental impacts below the NEPA significance threshold is similarly binding upon the agency.<sup>48</sup> When the mitigation results in a FONSI in a NEPA analysis, the mitigation is considered legally binding.<sup>49</sup> Because these regulations create a clear obligation for the agency to ensure any proposed mitigation adopted in the environmental review process is performed, there is assurance that mitigation will lead to a reduction of environmental impacts in the implementation stage and include binding mechanisms for enforcement.

Another important mechanism in the Army’s regulations to assure effective mitigation results is the requirement to fully fund and implement adopted mitigation. It is acknowledged in the regulations that “unless money is actually budgeted and manpower assigned, the mitigation does not exist.”<sup>50</sup> As a result, a proposed action cannot proceed until all adopted mitigation is fully resourced or until the lack of funding is addressed in the NEPA analysis.<sup>51</sup> This is an important step in the planning process, as mitigation benefits are unlikely to be realized unless financial and planning resources are committed through the NEPA planning process.

#### b. Mitigation Monitoring

The Army regulations recognize that monitoring is an integral part of any mitigation system.<sup>52</sup> As the Army regulations require, monitoring plans and implementation programs should be summarized in NEPA documentation, and should consider several important factors. These factors include anticipated changes in environmental conditions or project activities,

unexpected outcomes from mitigation, controversy over the selected alternative, potential impacts or adverse effects on federally or state protected resources, and statutory permitting requirements.<sup>53</sup> Consideration of these factors can help prioritize monitoring efforts and anticipate possible challenges.

The Army regulations distinguish between implementation monitoring and effectiveness monitoring. Implementation monitoring ensures that mitigation commitments made in NEPA documentation are implemented. To further this objective, the Army regulations specify that these conditions must be written into any contracts furthering the proposed action. In addition, the agency or unit proposing the action is ultimately responsible for the performance of the mitigation activities.<sup>54</sup> In a helpful appendix to its regulations, the Army outlines guidelines for the creation of an implementation monitoring program to address contract performance, the role of cooperating agencies, and the responsibilities of the lead agency.<sup>55</sup>

The Army’s effectiveness monitoring addresses changing conditions inherent in evolving natural systems and the potential for unexpected environmental mitigation outcomes. For this monitoring effort, the Army utilizes its Environmental Management System (EMS) based on the standardized ISO 14001 protocols.<sup>56</sup> The core of this program is the creation of a clear and accountable system for tracking and reporting both quantitative and qualitative measures of the mitigation efforts. An action-forcing response to mitigation failure is essential to the success of any mitigation program. In the context of a mitigated FONSI, the Army regulations provide that if any “identified mitigation measures do not occur, so that significant adverse environmental effects could be reasonably expected to result, the [agency actor] must publish a [Notice of Intent] and prepare an EIS.”<sup>57</sup> This is an essential response measure to changed conditions in the proposed agency action. In addition, the Army regulations address potential failures in the mitigation systems identified

through monitoring. If mitigation is ineffective, the agency entity responsible should re-examine the mitigation and consider a different approach to mitigation. However, if mitigation is required to reduce environmental impacts below significance levels are found to be ineffective, the regulations contemplate the issuance of a Notice of Intent and preparation of an EIS.<sup>58</sup>

The Army regulations also provide guidance for the challenging task of defining parameters for effectiveness monitoring. Guidelines include identifying a source of expertise, using measurable and replicable technical parameters, conducting a baseline study before mitigation is commenced, using a control to isolate mitigation effects, and, importantly, providing timely results to allow the decision-maker to take corrective action if necessary.<sup>59</sup> In addition, the regulations call for the preparation of an environmental monitoring report to determine the accuracy of the mitigation impact predictions made in the NEPA planning process.<sup>60</sup> The report is essential for agency planning and documentation and promotes public engagement in the mitigation process.

#### c. Public Engagement

The Army regulations seek to integrate robust engagement of the interested public in the mitigation monitoring program. The regulations place responsibility on the entity proposing the action to respond to inquiries from the public and other agencies regarding the status of mitigation adopted in the NEPA process.<sup>61</sup> In addition, the regulations find that “concerned citizens are essential to the credibility of [the] review” of mitigation effectiveness.<sup>62</sup> The Army specifies that outreach with the interested public regarding mitigation efforts is to be coordinated by the installation’s Environmental Office.<sup>63</sup> These regulations bring the public a step closer to the process by designating an agency source responsible for enabling public participation, and by acknowledging the important role the public can play to ensure the integrity and tracking of the mitigation process. The success of

<sup>46</sup> See 40 CFR 1508.2.

<sup>47</sup> 32 CFR 651.15(b).

<sup>48</sup> *Id.* § 651.35(g).

<sup>49</sup> *Id.* § 651.15(c).

<sup>50</sup> *Id.* § 651.15(d).

<sup>51</sup> *Id.* § 651.15(d).

<sup>52</sup> *Id.* § 651.15(i).

<sup>53</sup> *Id.* §§ 651.15(h)(1)–(4) Appendix C to 32 CFR part 651, 67 FR 15,290, 15,326–28, Mar. 29, 2002.

<sup>54</sup> *Id.* § 651.15(i)(1).

<sup>55</sup> See Appendix C to 32 CFR part 651, 67 FR 15,290, 15,326–28, Mar. 29, 2002.

<sup>56</sup> See also CEQ, “Aligning NEPA Processes with Environmental Management Systems” (2007), available at [http://ceq.hss.doe.gov/nepa/nepapubs/Aligning\\_NEPA\\_Processes\\_with\\_Environmental\\_Management\\_Systems\\_2007.pdf](http://ceq.hss.doe.gov/nepa/nepapubs/Aligning_NEPA_Processes_with_Environmental_Management_Systems_2007.pdf).

<sup>57</sup> 32 CFR 651.15(c).

<sup>58</sup> See *id.* § 651.35(g) (describing the implementation steps, including public availability and implementation tracking, that must be taken when a FONSI requires mitigation); *id.* § 651.15(k).

<sup>59</sup> See subsections (g)(1)–(5) of Appendix C to 32 CFR part 651, 67 FR at 15,327.

<sup>60</sup> 32 CFR 651.15(l).

<sup>61</sup> *Id.* § 651.15(b).

<sup>62</sup> *Id.* § 651.15(k).

<sup>63</sup> 32 CFR 651.15(j).



agency mitigation efforts will be bolstered by public access to timely information on NEPA mitigation monitoring.

**Nancy H. Sutley,**

*Chair, Council on Environmental Quality.*

[FR Doc. 2011-1188 Filed 1-20-11; 8:45 am]

BILLING CODE 3125-W0-P

## NATIONAL SCIENCE FOUNDATION

### 45 CFR Part 680

RIN 3145-AA51

#### National Science Foundation Rules of Practice and Statutory Conflict-of-Interest Exemptions

**AGENCY:** National Science Foundation.

**ACTION:** Final rule.

**SUMMARY:** The National Science Foundation (NSF) is amending its regulations to remove the provisions concerning statutory conflict-of-interest exemptions.

**DATES:** The final rule is effective on January 21, 2011.

**FOR FURTHER INFORMATION CONTACT:** Robin Clay, Deputy Ethics Official, Office of the General Counsel, National Science Foundation, 4201 Wilson

Boulevard, Room 1265, Arlington, Virginia 22230; Telephone: (703) 292-8060; Facsimile: (703) 292-9041; e-mail: *COI@nsf.gov*.

**SUPPLEMENTARY INFORMATION:** The National Science Foundation (NSF) is amending its regulations to remove the provisions in 45 CFR 680.20 (subpart B) in their entirety. On December 18, 1996 (61 FR 66830), the Office of Government Ethics (OGE) issued executive branch-wide regulations on exemptions and waivers for financial interests under 18 U.S.C. 280(b) (codified at 5 CFR part 2640). The portion of the OGE regulations on exemptions under 18 U.S.C. 208(b)(2) supersedes the provisions of subpart B of the NSF regulations (45 CFR part 680).

#### Background

In accordance with OGE's issuance of the final rule regarding 18 U.S.C. 208(b) exemptions and waivers (5 CFR 2640), the Foundation is issuing this final rule removing 45 CFR part 680 subpart B in its entirety.

Because the Foundation is required to delete the superseded provisions of 45 CFR part 680 subpart B relating to 208(b)(2) exemptions, with no discretion in the matter, the Foundation finds, pursuant to 5 U.S.C. 533(b)(B), that there is good cause not to seek

public comment on this rule, as such comment is unnecessary. Furthermore, for the reasons stated above, the Foundation finds, pursuant to 5 U.S.C. 533(d)(3), that good cause exists to make this rule effective upon publication of this notice.

#### List of Subjects in 45 CFR Part 680

Conflict of interests.

Accordingly, 45 CFR part 680 is amended as follows:

#### PART 680—NATIONAL SCIENCE FOUNDATION RULES OF PRACTICE

■ 1. The authority citation for part 680 is revised to read as follows:

**Authority:** 5 U.S.C. 7301; 42 U.S.C. 1870(a); 5 CFR 2635.105(c)(3).

■ 2. The heading of part 680 is revised to read as set forth above.

#### Subpart B—[Removed and Reserved]

■ 3. Subpart B, consisting of § 680.20, is removed and reserved.

Dated: January 10, 2011.

**Lawrence Rudolph,**

*General Counsel.*

[FR Doc. 2011-890 Filed 1-20-11; 8:45 am]

BILLING CODE 7555-01-P



EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY  
COUNCIL ON ENVIRONMENTAL QUALITY  
WASHINGTON, D.C.



November 30, 2022

MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES

FROM: Arati Prabhakar, Ph.D. *Arati Prabhakar*  
Assistant to the President and Director  
Office of Science and Technology Policy  
Brenda Mallory *Brenda Mallory*  
Chair, Council on Environmental Quality

SUBJECT: Guidance for Federal Departments and Agencies on Indigenous Knowledge

**I. Introduction**

The Federal Government recognizes the valuable contributions of the Indigenous Knowledge<sup>1</sup> that Tribal Nations<sup>2</sup> and Indigenous Peoples<sup>3</sup> have gained and passed down from generation to generation and the critical importance of ensuring that Federal departments and agencies' (Agencies) consideration and inclusion of Indigenous Knowledge is guided by respect for the sovereignty and self-determination of Tribal Nations; the Nation-to-Nation relationship between the United States and Tribal Nations and the United States' trust responsibility; and the need for the consent of and honest engagement with Tribal Nations and Indigenous Peoples. The White House Office of Science and Technology Policy (OSTP) and the Council on Environmental Quality (CEQ) issue this guidance to assist Agencies in (1) understanding Indigenous Knowledge, (2) growing and maintaining the mutually beneficial relationships with Tribal Nations and Indigenous Peoples needed to appropriately include Indigenous Knowledge, and (3) considering, including, and applying Indigenous Knowledge in Federal research, policies, and

<sup>1</sup> This guidance generally uses the phrase "Indigenous Knowledge," but recognizes that a variety of terms, including Traditional Ecological Knowledge, Traditional Knowledge, Indigenous Traditional Knowledge, Native Science, and related formulations, which are preferred by different Tribes and Indigenous Peoples. Those terms are used when referencing specific situations in which the relevant Tribes, Indigenous Peoples, or Federal decisionmaker has selected a different term.

<sup>2</sup> "Tribal Nation" or "Tribe" means an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges as a Federally recognized Tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. § 5130.

<sup>3</sup> "Indigenous Peoples" refers to Native Americans, Alaska Natives, Native Hawaiians, Pacific Islanders, and Indigenous Peoples whose ancestors have occupied what is now known as the United States since time immemorial, including members of Tribal Nations.



decision making. This guidance also identifies promising practices—based on agency experience and Tribal and Indigenous input—for collaborating with Tribal Nations and Indigenous Peoples, considering and applying Indigenous Knowledge in implementing statutory and regulatory requirements, and respecting the decisions of Tribal Nations and Indigenous Peoples to engage or decline to participate in Federal processes, on their terms.

Since Indigenous Knowledge is often unique and specific to a Tribe or Indigenous People, and may exist in a variety of forms, Agencies often lack the expertise to appropriately consider and apply Indigenous Knowledge. As a result, consultation and collaboration with Tribal Nations and Indigenous Peoples is critical to ensuring that Indigenous Knowledge is considered and applied in a manner that respects Tribal sovereignty and achieves mutually beneficial outcomes for Tribal and Indigenous communities.

This guidance builds on other recent Federal efforts related to Indigenous Knowledge. Through Executive Order 14072 on *Strengthening the Nation's Forests, Communities, and Local Economies*, President Biden established a policy to support indigenous traditional ecological knowledge and cultural and subsistence practices in our Nation's forests. Through Executive Order 14049 on the *White House Initiative on Advancing Educational Equity, Excellence, and Economic Opportunity for Native Americans and Strengthening Tribal Colleges and Universities*, President Biden committed to promoting Indigenous learning through the use of traditional ecological knowledge. Through Executive Order 13990 on *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*, President Biden reestablished the Northern Bering Sea Climate Resilience Area and its associated Federal Task Force and Tribal Advisory Council, and recognized the value of traditional knowledge and participation by Alaska Native Tribal governments in decisions affecting the Northern Bering Sea Climate Resilience Area.<sup>4</sup>

Similarly, in the proclamation establishing the Bears Ears National Monument, former President Obama recognized that traditional ecological knowledge “offers critical insight into the historic and scientific significance of the area,” and is itself a resource to be protected.<sup>5</sup> The proclamation also established a first-of-its-kind commission of Tribal Leaders to provide guidance to the Federal Government to ensure that “management decisions affecting the monument reflect Tribal expertise and traditional and historical knowledge.” When President Biden confirmed and restored the Bears Ears National Monument, he reestablished the Bears Ears Commission and reaffirmed the critical importance of traditional knowledge for managing the monument.

A number of Agencies have also recognized the importance of Indigenous Knowledge for their work. The Departments of Agriculture and the Interior and some of their individual bureaus and services, the U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the Advisory Council on Historic Preservation have issued agency-specific

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<sup>4</sup> See Appendix A (providing examples of Indigenous Knowledge application and collaboration between the Federal Government and tribes and indigenous peoples).

<sup>5</sup> Presidential Proclamation 9558, Establishment of the Bears Ears National Monument, 82 Fed. Reg. 1139 (Jan. 5, 2017).

guidance on Indigenous Knowledge.<sup>6</sup> The Fourth National Climate Assessment, prepared by the U.S. Global Change Research Program, also included Indigenous Knowledge.<sup>7</sup> A number of Agencies have also co-managed a variety of natural resources with Tribes, and Indigenous Knowledge has shaped those processes as well.<sup>8</sup> Recent efforts have been taken at the highest levels of the Federal Government to highlight the importance of Indigenous Knowledge to inform Federal decision making, improve outcomes, and foster collaboration with Tribal Nations. However, efforts to include Indigenous Knowledge in Federal work and to collaborate with Tribal Nations and Indigenous Peoples on Indigenous Knowledge have been uneven. This important work is too often dependent on the willingness, capacity, and Agency support of individual Federal employees.

To that end, and in response to the Biden-Harris Administration policies and initiatives referenced above, OSTP and CEQ issued a memorandum on November 15, 2021, recognizing Indigenous Knowledge as one of the many important bodies of knowledge that contributes to the scientific, technical, social, and economic advancements of the United States, and to our collective understanding of the natural world. OSTP and CEQ then convened an Interagency Working Group with representatives from more than 25 Federal departments and agencies.<sup>9</sup> OSTP and CEQ also sought input from Tribal Nations and Indigenous Peoples through Tribal consultation and listening sessions,<sup>10</sup> and engaged with more than a thousand individuals, organizations, and Tribal Nations.

This guidance builds upon that memorandum and is intended to promote and enable a Government-wide effort to improve the recognition and inclusion of Indigenous Knowledge. It reaffirms that Agencies should recognize and, as appropriate, apply Indigenous Knowledge in decision making, research, and policies across the Federal Government. This guidance is founded on the understanding that multiple lines of evidence or ways of knowing can lead to better-informed decision making. Agencies should use this guidance to develop an approach to Indigenous Knowledge that is appropriate for the contexts and legal frameworks in which they operate, the Tribes and Indigenous Peoples with whom they partner, and the communities that they serve.

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<sup>6</sup> See Appendix B (providing a selection of Federal agency guidance documents on Indigenous Knowledge).

<sup>7</sup> USGCRP, 2018. *Tribes and Indigenous Peoples*. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*. D. R. Reidmiller et al., eds. [hereafter “Fourth National Climate Assessment”], pp. 572–603, available at <https://nca2018.globalchange.gov/chapter/15/> (explaining how indigenous peoples can also be affected uniquely and disproportionately by climate change); see also Bharat H. Desai et al., 2021. *Role of Climate Change in Exacerbating Sexual and Gender-Based Violence against Women: A New Challenge for International Law*, Environmental Policy and Law 51, p. 142, available at [https://www.un.org/sexualviolenceinconflict/wp-content/uploads/2021/10/report/role-of-climate-change-in-exacerbating-sexual-and-gender-based-violence-against-women-a-new-challenge-for-international-law/epl\\_2021\\_51-3\\_epl-51-3-epl210055\\_epl-51-epl210055.pdf](https://www.un.org/sexualviolenceinconflict/wp-content/uploads/2021/10/report/role-of-climate-change-in-exacerbating-sexual-and-gender-based-violence-against-women-a-new-challenge-for-international-law/epl_2021_51-3_epl-51-3-epl210055_epl-51-epl210055.pdf);

<sup>8</sup> See Appendix A (providing examples of Indigenous Knowledge application and collaboration between the Federal Government and tribes and indigenous peoples).

<sup>9</sup> See Appendix D (providing a list of Federal departments and agencies that participated in the IWG).

<sup>10</sup> See OSTP, CEQ (June 27, 2022). Press Release, Readout: OSTP and CEQ Initial Engagement on White House Indigenous Knowledge Effort, <https://www.whitehouse.gov/ostp/news-updates/2022/06/27/readout-ostp-and-ceq-initial-engagement-on-white-house-indigenous-knowledge-effort/> (providing a summary of consultation and engagement activities).



## II. Overview of Indigenous Knowledge

This Section provides an overview of Indigenous Knowledge as a system of knowledge and its relationship to other systems of knowledge.

### *A. Understanding Indigenous Knowledge*

Indigenous Knowledge is a body of observations, oral and written knowledge, innovations, practices, and beliefs developed by Tribes and Indigenous Peoples through interaction and experience with the environment.<sup>11</sup> It is applied to phenomena across biological, physical, social, cultural, and spiritual systems.<sup>12</sup> Indigenous Knowledge can be developed over millennia, continues to develop, and includes understanding based on evidence acquired through direct contact with the environment and long-term experiences, as well as extensive observations, lessons, and skills passed from generation to generation.<sup>13</sup> Indigenous Knowledge is developed by Indigenous Peoples including, but not limited to, Tribal Nations, Native Americans, Alaska Natives, and Native Hawaiians. Each Tribe or Indigenous community has its own place-based body of knowledge that may overlap with that of other Tribes.

Indigenous Knowledge is based in ethical foundations often grounded in social, spiritual, cultural, and natural systems that are frequently intertwined and inseparable, offering a holistic perspective. Indigenous Knowledge is inherently heterogeneous due to the cultural, geographic, and socioeconomic differences from which it is derived, and is shaped by the Indigenous Peoples' understanding of their history and the surrounding environment. Indigenous Knowledge is unique to each group of Indigenous Peoples and each may elect to utilize different terminology or express it in different ways. Indigenous Knowledge is deeply connected to the Indigenous Peoples holding that knowledge.

### *B. Indigenous Knowledge as Evidence*

Indigenous Knowledge is a valid form of evidence for inclusion in Federal policy, research and decision making. Indigenous Knowledge and other forms of knowledge do not depend on each other for validation, and each system can support the insights of the other. Indigenous Knowledge and non-Indigenous scientific methodologies share many common features. For example, they: (1) systematically understand and explain ways of knowing; (2) share attributes such as use of systematic observation, innovation, and verification through repetition; (3) are derived from direct contact with the environment and evolve over time in response to new inputs; (4) share the need to make sense of the world and the desire to conduct practical and curiosity-driven investigations; and (5) can use empirical approaches.

Indigenous Knowledge can provide accurate information, valuable insights, and effective practices that complement practices and knowledge derived from other approaches. For example,

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<sup>11</sup> U.S. Fish & Wildlife Services, (Feb. 2011), *Traditional Ecological Knowledge for Application by Service Scientists*, <https://www.fws.gov/sites/default/files/documents/TEK-Fact-Sheet.pdf>; see also Inuit Circumpolar Council (2022). *Indigenous Knowledge*, <https://www.inuitcircumpolar.com/icc-activities/environment-sustainable-development/Indigenous-knowledge>.

<sup>12</sup> U.S. Fish & Wildlife Services (Feb. 2011), *Traditional Ecological Knowledge for Application by Service Scientists*, <https://www.fws.gov/sites/default/files/documents/TEK-Fact-Sheet.pdf>.

<sup>13</sup> Id.

at times Indigenous Knowledge holders have observed early and accurate detection of environmental changes, such as interconnected patterns of species, signs of drought, or impacted water quality.<sup>14</sup> Indigenous Knowledge and other forms of knowledge often provide complementary data and information. In some instances, discrepancies or contradictory data and information may arise. These conflicts do not necessarily indicate that the Indigenous Knowledge or other form of knowledge is in error. Rather, such instances should prompt Agencies to consider opening avenues of inquiry and understanding that would otherwise remain unexplored. Multiple ways of knowing or lines of evidence can improve research outcomes and improve decision making.

At times, Western science has been used as a tool to oppress Tribal Nations and Indigenous Peoples. Indigenous Peoples in the United States have experienced significant unethical health research abuses, including the use of genetic data and health records without their knowledge or consent.<sup>15</sup> For example, the pseudoscience embodied in the eugenics movement, with the collaboration of scientists and medical providers, resulted in the forced sterilization of Indigenous women across the Nation.<sup>16</sup> Indigenous Knowledge has also been historically marginalized in scientific communities and excluded from research and academic resources, funding, and other opportunities. Federal decisionmakers have also excluded Indigenous Knowledge from research and policy decisions. This marginalization has resulted from a lack of awareness, unfamiliarity and methodological dogma, and, too often, racism and imperialism.

Some Federal decisionmakers have taken strides to address these historical wrongs and elevate Indigenous Knowledge, but more work remains. This guidance provides considerations and practices to further the important work of ensuring that Agencies appropriately include Indigenous Knowledge, while respectfully working with the Tribes and Indigenous Peoples who hold it.

### **III. Illustrative List of Federal Statutes where Indigenous Knowledge May be Relevant**

Where Federal statutes require Agencies to consider information and make informed decisions, Agencies should consult and collaborate with Tribal Nations and Indigenous Peoples to include Indigenous Knowledge in decision making. The following non-exhaustive list includes examples drawn from environmental and natural resources law, contexts in which Agencies make decisions with Tribal or Indigenous implications, and have opportunities to include Indigenous Knowledge to inform those decisions. Section V of this guidance discusses other Federal statutes focused on vetting the quality of information that may inform Federal decision making in these statutory contexts.

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<sup>14</sup> E.g., Fourth National Climate Assessment, 383-84; Karletta Chief et al., (2016). *Engaging Southwestern Tribes in Sustainable Water Resources Topics and Management*, 8 Water 1; George Noongwook et al., (2007). *Traditional Knowledge of the Bowhead Whale (Balaena Mysticus) Around St. Lawrence Island, Alaska*, 60 Arctic 47.

<sup>15</sup> Malcolm B. Bowekaty & Dena S. Davis, (2003). *Cultural Issues in Genetic Research with American Indian and Alaskan Native People*, 25 Ethics & Res. 12; Max Liboiron, (2021). *Decolonizing Geoscience Requires More than Equity and Inclusion*, 14 Nature Geoscience 876; Nanibaa' A. Garrison, (2010). *Genomic Justice for Native Americans: Impacts of the Havasupai Case on Genetic Research*, 38 Am. J. Of Med. Genetics 7; Kim Tallbear (2013). *Native American DNA: Tribal Belonging and the False Promise of Genetic Science*, U Minnesota Press.

<sup>16</sup> Gregory W. Ruteck (2011). *Forced Sterilization of Native Americans: Later Twentieth Century Physician Cooperation with National Eugenic Policies?*, 27 Ethics & Med. 33, 34-35.



*Endangered Species Act.*<sup>17</sup> The Endangered Species Act requires Agencies to use science and evidence to make decisions such as listing and delisting endangered species, developing biological opinions, and designating critical habitat for species protection. Specifically, the Act requires that Secretaries of the Interior and Commerce make critical habitat and listing determinations based on the “best scientific and commercial data available.”<sup>18</sup> In many instances, Tribes and Indigenous Peoples may have relevant information about species locations, behaviors, habitats, and changes over time that can be applied.

*National Environmental Policy Act.*<sup>19</sup> The National Environmental Policy Act (NEPA) requires Agencies to analyze, consider, and disclose the effects of major Federal actions on the human environment. CEQ’s implementing regulations also direct Agencies to “make use of any reliable data sources” in carrying out their responsibilities under NEPA.<sup>20</sup> Through the NEPA process, Agencies often engage with affected communities to inform the assessment of environmental effects. Agencies should recognize that Tribes and Indigenous Peoples hold relevant information and perspectives regarding the environment, and Indigenous Knowledge can inform Agencies’ environmental analysis. Tribes and Indigenous communities may have special expertise with respect to environmental and community impacts, informed by Indigenous Knowledge. Tribes can play a key role in the NEPA process as a cooperating or participating agency. Common circumstances in which Indigenous Knowledge may arise include environmental reviews of resource management plans, forest plans, energy resource lease sales, and other Federal authorizations regarding the use of public lands.

*Marine Mammal Protection Act.*<sup>21</sup> The Marine Mammal Protection Act (MMPA) establishes a national policy to prevent marine mammal species and population stocks from declining to the point where they cease to be significant functioning parts of healthy and stable ecosystems.<sup>22</sup> Section 119 of the MMPA authorizes the Departments of the Interior and Commerce to enter into cooperative agreements with Alaska Native Organizations, to conserve marine mammal populations, and to allow for the co-management of subsistence uses.<sup>23</sup> Through these agreements, Agencies can work with Tribal Nations and Indigenous Peoples to include Indigenous Knowledge in Federal policy decisions regarding conservation and management of marine mammals.

*Magnuson-Stevens Fishery Conservation and Management Act.*<sup>24</sup> The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law governing marine fisheries management in United States Federal waters. Under the MSA, fishery conservation and management measures must, among other things, prevent overfishing while allowing use of and

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<sup>17</sup> 16 U.S.C. §§ 1531-44.

<sup>18</sup> 16 U.S.C. §§ 1533(b)(1), (2).

<sup>19</sup> 42 U.S.C. §§ 4321, *et seq.*

<sup>20</sup> 40 C.F.R. § 1502.23.

<sup>21</sup> Pub L. No. 92-522, 86 Stat. 1027 (codified in Title 16 of the U.S. Code).

<sup>22</sup> 16 U.S.C. § 1361.

<sup>23</sup> 16 U.S.C. § 1388(a).

<sup>24</sup> Pub. L. No. 94-265, 90 Stat. 331 (codified in Title 16 of the U.S. Code).

access to fishery resources.<sup>25</sup> These measures must be based upon the best scientific information available., Management measures must also account for the importance of fishery resources to fishing communities and provide for their sustained access to those resources.<sup>26</sup> The MSA allows for many sources of information, including Indigenous Knowledge, to be considered in fisheries management through various opportunities for public engagement, including from Indigenous Peoples and Tribes.<sup>27</sup> The MSA also establishes eight regional fishery management councils,<sup>28</sup> and the National Marine Fisheries Service (NMFS) manages fisheries in coordination with these councils.<sup>29</sup> The MSA explicitly reserves a seat for Tribes on one of the eight regional councils, the Pacific Fishery Management Council (Pacific Council).<sup>30</sup> Tribal representatives are appointed to the Pacific Council by the Secretary of Commerce from submissions by Tribal governments.<sup>31</sup>

*National Historic Preservation Act.*<sup>32</sup> The National Historic Preservation Act (NHPA) acknowledges the importance of preserving our Nation's diverse heritage and directs Agencies to act as responsible stewards of historic properties, including those of religious and cultural significance to Tribal Nations and Native Hawaiian organizations (NHO). Section 106 of the NHPA establishes a process to ensure that Agencies take into account the effects of projects they carry out, license, or assist on historic properties. This section also requires Agencies to consult with any Tribal Nation or NHO that may attach religious and cultural significance to a property within the undertaking's area of potential effects. The NHPA directs Agencies to recognize the special expertise of Tribal Nations and NHOs, including Indigenous Knowledge, in the Section 106 process.<sup>33</sup>

*Native American Graves Protection and Repatriation Act.*<sup>34</sup> The Native American Graves Protection and Repatriation Act (NAGPRA) requires Agencies and institutions that receive Federal funding to repatriate Native American human remains and cultural items to lineal descendants, Indian Tribes, and NHOs.<sup>35</sup> Consultation is a critical component for addressing identification, treatment, and return of Native American human remains and cultural items. The

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<sup>25</sup> 16 U.S.C. § 1801.

<sup>26</sup> 16 U.S.C. §§ 1851(a)(1)-(10); *see* Julie Raymond-Yakoubian et al., (2017). *The Incorporation of Traditional Knowledge into Alaska Federal Fisheries Management*, 78 Marine Pol'y 132 (recommending processes for recognition and application of Indigenous Knowledge to western Alaska Federal fisheries management).

<sup>27</sup> *E.g.*, 16 U.S.C. § 1852(i)(2) (establishing public fishery council meetings unless subject to limited exceptions); 16 U.S.C. §§ 1854(a)(1)(B), (b)(1)(A) & (c) (requiring public notice and comment for fishery management plans, plan amendments, and regulations).

<sup>28</sup> 16 U.S.C. § 1852.

<sup>29</sup> 16 U.S.C. § 1852(a)(3) (granting Department of Commerce authority to manage certain highly migratory species fisheries).

<sup>30</sup> 16 U.S.C. §§ 1852(a)(1)(F) & (b)(5).

<sup>31</sup> 16 U.S.C. § 1852(b)(5); *see also* 50 C.F.R. § 600.215(a)(2)(ii).

<sup>32</sup> Pub. L. No. 89-665, 80 Stat. 915 (codified in scattered sections of 54 U.S.C.).

<sup>33</sup> 36 C.F.R. § 800.2(c)(2); 36 C.F.R. § 800.4(c)(1); Advisory Council on Historic Preservation, (2021). *Traditional Knowledge and the Section 106 Process: Information for Federal Agencies and Other Participants*; *see also* 54 U.S.C. § 302706 (requiring Federal agencies to consult with Tribes or Native Hawaiian Organizations regarding eligibility of property for the National Register of Historic Places).

<sup>34</sup> 25 U.S.C. §§ 3001-3013.

<sup>35</sup> 25 U.S.C. §§ 3001(8) & 3005.



law encourages a continuing dialogue between museums or Agencies and Indian Tribes and NHOs, which promotes a greater understanding between those groups.<sup>36</sup> NAGPRA expressly specifies forms of Indigenous Knowledge, such as linguistic, folkloric, oral traditional evidence, and tribal expert opinion, as necessary information for determining the affiliation and repatriation of Native American human remains and cultural items.<sup>37</sup>

#### **IV. Growing and Maintaining Relationships to Support Indigenous Knowledge**

Appropriately recognizing, considering, and applying Indigenous Knowledge requires growing and maintaining strong and mutually beneficial relationships between Agencies and Tribes and Indigenous Peoples. Such relationships provide opportunities to identify shared values and goals, build trust and common understanding, and facilitate the exchange of information. These relationships can also help Agencies identify and pursue actions to support Tribes in protecting and enhancing Indigenous Knowledge, develop better approaches to scientific research informed by and inclusive of Indigenous Knowledge, and make better-informed and more effective decisions. These approaches may include pursuing co-management of resources and co-production of knowledge. Agencies should also pursue opportunities to provide direct funding or other support to Tribes and Indigenous Peoples organizations to build capacity to fully participate in and, as appropriate, lead research, initiatives, and other actions that include Indigenous Knowledge.<sup>38</sup>

In light of the injustice and marginalization of Indigenous Peoples, it is incumbent on Agencies to make sustained efforts to build and maintain trust to support Indigenous Knowledge. Agencies should include the following principles and practices:

*1. Acknowledge Historical Context and Past Injustice.* Understanding the different experiences of Tribal and Indigenous Peoples is critical for Agencies to work with them and engage effectively with Indigenous Knowledge. Agencies should acknowledge the history of the department or agency they represent, and the Federal Government broadly, when working with Tribes and Indigenous Peoples. Recognizing past injustice, while upholding Tribal treaty and reserved rights, and respecting Tribal and Indigenous communities, cultures, and values will assist Agencies in developing collaborative processes that are more equitable and inclusive of Indigenous Peoples and their knowledge systems.

The genocide and ethnocide of Indigenous Peoples in the United States is well documented.<sup>39</sup> Historically, Federal policies have resulted in the separation (both physically and intellectually)

<sup>36</sup> E.g., 25 U.S.C. § 3004(b)(1)(B); 25 U.S.C. § 3005.

<sup>37</sup> 25 U.S.C. § 3005(a)(4).

<sup>38</sup> E.g., National Oceanic and Atmospheric Administration (NOAA) (Aug. 18, 2022), *Pilot project to support Tribal climate resilience in Alaska*, <https://www.noaa.gov/news-release/pilot-project-to-support-tribal-climate-resilience-in-alaska> (NOAA directly funded a climate resilience position at the Alaska Native Tribal Health Consortium to build capacity and coordination of Indigenous-led climate resilience and preparedness); see generally Alaska Native Tribal Health Consortium, <https://www.anthc.org>.

<sup>39</sup> See Roxanne Dunbar-Ortiz, (2015). *An Indigenous Peoples' History of the United States*; Delight E. Satter et al. (2021). *American Indian and Alaska Native Knowledge and Public Health for the Primary Prevention of Missing or Murdered Indigenous Persons*, 69 Dep. Justice J. Fed. Law Prac. 149, <https://pubmed.ncbi.nlm.nih.gov/34734212>;



of Indigenous Peoples from the places they are connected to, severing relationships with lands, waters, and social systems, which are all critical elements of Indigenous Knowledge.<sup>40</sup> These policies systematically served to assimilate and displace Native people and eradicate Native cultures.<sup>41</sup>

Today, Tribes and Indigenous communities continue to experience the impacts of intergenerational trauma resulting from the legacies of these Federal policies.<sup>42</sup> However, Tribes and Indigenous communities have demonstrated remarkable resiliency in maintaining and continuing to develop Indigenous Knowledge, which has existed since time immemorial and remains strong today.

2. *Practice Early and Sustained Engagement.* When Agencies pursue policies that have Tribal implications, they must engage in regular, meaningful, and robust consultation with Tribal Nations consistent with the agency's Tribal consultation action plan, the Presidential Memorandum on *Tribal Consultation and Strengthening Nation-to-Nation Relationships*,<sup>43</sup> and Executive Order 13175 on *Consultation and Coordination with Indian Tribal Governments*.<sup>44</sup> Consultation is a cornerstone of building and maintaining trust with Tribal Nations. Consultation may also provide opportunities to discuss Indigenous Knowledge with Tribal Nations, and understand from Tribal Nations, how Indigenous Knowledge could inform the Agency's decision-making process. Agencies should not initiate consultation with an assumption that the Tribal Nation will share its knowledge with the agency, but rather with an inclusive process that empowers the Tribal Nation to determine if, and how, Indigenous Knowledge may be included in the agency's process.

Agencies should also consider opportunities to engage with Indigenous Peoples, including Native Hawaiians and other Indigenous Peoples unaffiliated with Federally Recognized Tribes, on Indigenous Knowledge beyond the formal consultation process. Agencies should collaboratively shape these engagement activities and consider, as appropriate, Federal regulations and policies, relevant Tribal regulations and protocols, the context and nature of the proposed Federal action, and any prior efforts to collaborate. These engagement activities may include listening sessions, public meetings, or other outreach with Indigenous communities, Indigenous knowledge holders, Elders, and youth around Indigenous Knowledge in Federal

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Bryan Newland (May 2022). *Federal Indian Boarding School Initiative, Investigative Report*, Department of the Interior 102, [https://www.bia.gov/sites/default/files/dup/inline-files/bsi\\_investigative\\_report\\_may\\_2022\\_508.pdf](https://www.bia.gov/sites/default/files/dup/inline-files/bsi_investigative_report_may_2022_508.pdf).

<sup>40</sup> See Roxanne Dunbar-Ortiz, (2015). *An Indigenous Peoples' History of the United States*; Dina Gilio-Whitaker, (2019). *As Long As the Grass Grows: The Indigenous Fight for Environmental Justice, from Colonization to Standing Rock*; Delight E. Satter et al. (2021). *American Indian and Alaska Native Knowledge and Public Health for the Primary Prevention of Missing or Murdered Indigenous Persons*, 69 Dep. Justice J. Fed. Law Prac. 149, <https://pubmed.ncbi.nlm.nih.gov/34734212/>.

<sup>41</sup> E.g., Bryan Newland, (May 2022). *Federal Indian Boarding School Initiative, Investigative Report*, Department of the Interior 102, [https://www.bia.gov/sites/default/files/dup/inlinefiles/bsi\\_investigative\\_report\\_may\\_2022\\_508.pdf](https://www.bia.gov/sites/default/files/dup/inlinefiles/bsi_investigative_report_may_2022_508.pdf).

<sup>42</sup> Delight E. Satter et al., (2021). *American Indian and Alaska Native Knowledge and Public Health for the Primary Prevention of Missing or Murdered Indigenous Persons*, 69 Dep. Justice J. Fed. Law Prac. 149, <https://pubmed.ncbi.nlm.nih.gov/34734212/>.

<sup>43</sup> Presidential Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships, 86 Fed. Reg. 7,491 (Jan. 29, 2021).

<sup>44</sup> Exec. Order No. 13,175, 65 Fed. Reg. 67,249 (Nov. 9, 2000).



decision making, policy or research. In designing and carrying out engagement, Agencies must respect the sovereignty of Tribal Nations and conduct outreach through the appropriate forums and with respect for the Nation-to-Nation relationship and the United States' trust responsibilities. Agencies should discuss plans for direct engagement with Tribal Nations or Indigenous Peoples and ensure sustained engagement throughout the development or implementation of the activity. When engaging with Indigenous Knowledge holders who are members of Federally-recognized Tribes, Agencies should be mindful of Tribal sovereignty and recognize that Tribal leaders grant consent for the sharing of Indigenous Knowledge. Agencies should engage only with such individual knowledge holders designated by Tribal leadership.

When Agencies engage with different partners and potential collaborators, including agency contractors, state and local governments, and non-governmental organizations, on Federal policies or actions that may affect Tribes, Agencies should ensure that such collaboration respects Tribal sovereignty and upholds the Federal Government's trust responsibilities. For example, Agencies may collaborate with:

- Tribal Government Agencies and Staff: Agencies should foster relationships with Tribal agencies and staff to discuss Federal policies that have Tribal implications and Indigenous Knowledge and to explore opportunities for collaboration. Agencies must be aware, however, that engagement with Tribal agencies and staff is not a substitute for consultation with Tribal leaders, and only Tribal leaders or their designated representatives can give consent on behalf of a Tribe to the sharing of Indigenous Knowledge with Agencies.
- Inter-Tribal Organizations and Non-profit Organizations: Inter-Tribal organizations and Tribal non-profit organizations are important partners within the domains in which they operate. They can span jurisdictions and serve as clearinghouses of information for Tribal Nations. Urban Indian Organizations also work to address concerns of Indigenous Peoples living in urban areas outside of the boundaries of Tribal Nations who may or may not be members of a Tribe. Agencies must be aware, however, that engagement with Inter-Tribal organizations and Tribal non-profit organizations does not satisfy the obligation to consult with Tribal Nations on a Nation-to-Nation basis, and only Tribal leaders or their designated representatives can consent on behalf of a Tribe to the sharing of Indigenous Knowledge with Agencies.
- Indigenous Knowledge Holders: The Tribal members and Indigenous People who hold Indigenous Knowledge may be Elders, cultural practitioners, and/or spiritual leaders. Agencies must ensure that any engagement with knowledge holders is respectful of Tribal sovereignty and self-governance.
- Local and State Governments: State and local governments also engage with Tribal Nations and Indigenous Peoples and may have policies to guide the consideration of Indigenous Knowledge. Agencies should strive to align policies where possible and to clearly communicate any differences to Tribal Nations and Indigenous Peoples to avoid confusion.
- Academics and Scholars: Academic and scholarly communities can serve as an additional network to create partnerships, co-produce knowledge, and increase collaboration to

include Indigenous Knowledge in Federal contexts. Agencies must ensure that such partnerships are consistent with the Federal trust responsibility to Tribal Nations and is respectful of Tribal sovereignty and self-governance and that academic collaborators also recognize and abide by the principal that consent is required before Indigenous Knowledge can be included in any research.

*3. Earn and Maintain Trust.* Building relationships with Tribes and Indigenous Peoples requires establishing (or rebuilding) and maintaining trust, which may be difficult because of the Federal Government's history of breaking promises to Tribes and policies that served to assimilate, marginalize, and oppress Tribal Nations and Indigenous Peoples. Agencies should proceed with patient and respectful persistence, and honest and transparent communication, to demonstrate that the desire to collaborate with and listen to Tribes and Indigenous Peoples is genuine. Agencies can also build trust by committing agency resources to training staff to develop cultural competency and respect for the traditional values, beliefs, and cultural practices of Tribes and Indigenous Peoples.

*4. Respect Different Processes and World Views.* Tribes and Indigenous Peoples may use decision-making processes substantially different from those used by Agencies and may approach issues from a different perspective, including considering the effects of current actions on future generations prior to making major decisions affecting their communities. For example, Haudenosaunee Chiefs rely on extensive deliberation and consensus-building to consider the ways in which decisions can impact the wellbeing of the next seven generations.<sup>45</sup> This Seventh Generation Principle, shared among many Tribes, reflects a holistic understanding of the world and the human place within it, and is embedded in songs and prayers, ceremonies, dances, storytelling, arts and technologies, and language, among other practices and cultural expressions.

Agencies should also be cognizant of the unique connection that many Tribes and Indigenous Peoples have with the lands, waters, plants, and animals within their traditional homelands. Agencies should be cognizant that many Tribes and Indigenous Peoples were forcibly removed from their traditional homelands but still retain cultural connections and interests in these areas. These resources may be necessary to Tribal and community health and wellbeing in ways that Agencies may not fully understand.<sup>46</sup> Agencies should also understand that Tribes and Indigenous Peoples may carefully guard information about their homelands and cultural connections to them.<sup>47</sup> Recognizing and respecting divergent processes and world views, and the sensitivity of Tribes about sharing certain information about them, is important for relationship building and understanding how to appropriately engage with Indigenous Knowledge.

*5. Recognize Challenges.* Agencies should recognize that Tribes and Indigenous Peoples face obstacles to equitable collaboration, including: (1) mistrust or skepticism; (2) lack of funding,

<sup>45</sup> *Values*, Haudenosaunee Confederacy, <https://www.haudenosauneeconfederacy.com/values>.

<sup>46</sup> See Symma Finn, Mose Herne, & Dorothy Castille, (2017). *The Value of Traditional Ecological Knowledge for the Environmental Health Sciences and Biomedical Research*, 125(8) *Env't Health Perspectives*, 085006-1, <https://doi.org/10.1289/EHP858>.

<sup>47</sup> ACHP (May 3, 2021). *Traditional Knowledge and the Section 106 Process: Information for Agencies and Other Participants*, <https://www.achp.gov/sites/default/files/2021-05/TraditionalKnowledgePaper5-3-21.pdf>.



personnel, and capacity among Tribes and Indigenous Peoples to respond to Federal requests to engage; (3) lack of coordination and communication between Agencies may result in duplicate requests, causing frustration and extra work for Tribes and Indigenous Peoples; (4) changes in political administrations, budgets, and leadership priorities may affect relationship continuity and collaborative efforts; and (5) telecommunications infrastructure and lack of broadband or internet in rural areas. Agencies should consider actions outlined in this guidance to address these challenges as part of their work to implement this guidance and include Indigenous Knowledge in decision making.

*6. Consider Co-management and Co-stewardship Structures.* Where available, Agencies should consider co-management, collaborative management, and co-stewardship of lands and waters as opportunities to include Tribal Nations, Indigenous Peoples, and Indigenous Knowledge in Federal actions. These approaches bring Tribal Nations directly into Federal decision making and such collaborations may help avoid challenges around and breaches of confidentiality or data, and imbalances in power and resources. While co-management may not be possible in all scenarios, and must be consistent with relevant Federal authorities, several Agencies already have in place co-management or shared governance structures for lands and waters.<sup>48</sup>

*7. Pursue Co-Production of Knowledge.* Similarly, Federal researchers should look for opportunities to work with Indigenous Knowledge holders to co-produce scientific information and propose solutions to inform decision making. Knowledge co-production is a research framework based on equity and the inclusion of multiple knowledge systems. It requires the full partnership of Tribes and Indigenous Peoples in all aspects of a research endeavor from the outset, including ensuring that Tribal and Indigenous collaborators are compensated for the work that they do and understand up front if funding is unavailable.

Federal scientists working in a knowledge co-production framework must navigate sharing power and decision-making authority with collaborating Tribes and Indigenous Peoples, and be honest and transparent about any limitations on their ability to share such power.<sup>49</sup> When developing methods and data collection protocols, Federal scientists should consider using Indigenous methodologies and incorporating Indigenous metrics and indicators in order to fully include Indigenous Knowledge in the research results. At the conclusion of the research, the results should be reviewed by the collaborating Tribe or Indigenous Peoples, and shared in ways that are meaningful and useful to them as well as to the broader scientific community.<sup>50</sup> As

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<sup>48</sup> Department of the Interior, Policy Memorandum 22-03, Fulfilling the National Park Service Trust Responsibility to Indian Tribes, Alaska Natives, and Native Hawaiians in the Stewardship of Federal Lands and Waters (Sept. 13, 2022), available at [https://www.nps.gov/subjects/policy/upload/PM\\_22-03.pdf](https://www.nps.gov/subjects/policy/upload/PM_22-03.pdf).

<sup>49</sup> This may necessitate expanded scientific integrity practices and expectations, such as granting communities more autonomy over research questions, respecting data and Indigenous Peoples and Tribes' decisions, and elevating qualitative data gathering and inclusion of different forms of evidence.

<sup>50</sup> See, e.g., R.L. Kelly, and Craig M. Lee (co-pis) (September 2017). Final Report to Glacier National Park: Ice Patches as Sources of Archeological and Paleoecological Data in Climate Change Research. RMCESU Cooperative Agreement Number: H1200090004 (IMR), [https://files.cfc.umt.edu/cesu/NPS/CU/2010/10\\_11Lee\\_GLAC\\_ice%20patch%20archeo\\_rpt.pdf](https://files.cfc.umt.edu/cesu/NPS/CU/2010/10_11Lee_GLAC_ice%20patch%20archeo_rpt.pdf).



members of the research team, Tribal or Indigenous collaborators should be co-authors of publications describing the results.

## **V. Applying Indigenous Knowledge**

This section identifies and discusses promising practices that Agencies should consider when working with Tribal Nations and Indigenous Peoples to include Indigenous Knowledge in Federal policy, research, or other decision making.<sup>51</sup> Agencies should be mindful and clear in communicating to Tribal Nations and Indigenous Peoples the specific factual and legal contexts in which they operate, and should consider developing agency-specific policy or guidance or revising existing consultation policies to include processes for including Indigenous Knowledge in decision making.

While this guidance focuses on opportunities for Agencies to appropriately engage with Indigenous Knowledge and intentionally promote opportunities to include Indigenous Knowledge in Federal decision making, there may be circumstances in which Agencies encounter Indigenous Knowledge unexpectedly. In both of these circumstances, to the extent practicable, the agency should consider adopting the following promising practices.

### *A. Promising Practices to Apply When Considering Indigenous Knowledge in Federal Processes*

This section provides promising practices to guide the manner in which Agencies engage with Indigenous Knowledge to ensure that this engagement respects the interests of Tribes and Indigenous Peoples, and considers Indigenous Knowledge where relevant and appropriate in Federal decisions. In implementing these practices, Agencies should be aware that different Tribes and Indigenous Peoples use different terminology to reflect their distinct histories and interests, including Traditional Ecological Knowledge, Traditional Knowledge, Indigenous Traditional Knowledge, and Native Science. Agencies are encouraged to use the term preferred by the communities with which they are engaging and to continue to learn more about the historic, legal, and cultural contexts related to their work with Indigenous Peoples and Indigenous Knowledge.<sup>52</sup> It is the decision of the Tribal Nation or Indigenous People involved whether their Indigenous Knowledge should be applied in Federal contexts and Agencies should respect this decision.

These promising practices are grounded in a wealth of experience among Tribes, Indigenous Peoples, and Agencies and include:

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<sup>51</sup> See Appendix E (providing additional references and resources for promising practices to apply when considering Indigenous Knowledge in Federal processes).

<sup>52</sup> ACHP (May 3, 2021). Traditional Knowledge and the Section 106 Process: Information for Agencies and Other Participants, <https://www.achp.gov/sites/default/files/2021-05/TraditionalKnowledgePaper5-3-21.pdf> (“Each Indian tribe or NHO may have their own information about a specific place that differs from that of another Tribe or NHO, because each has a unique culture and history. In many cases, different Tribes or NHOs may have different views or beliefs about the same place. The fact that each may hold different traditional knowledge about the same place does not invalidate that knowledge. Additional outreach and consultation may be required for a Federal agency to engage with multiple Tribes to better understand a single place; such additional efforts enrich the process and better inform decision-making.”).

*1. Identify Project Areas and Relevant Staff.* Agencies should identify those areas where Indigenous Knowledge is most likely to be offered or sought out. These areas should include those of particular interest to Tribes, like land and resource management decisions affecting traditional homelands. While Agencies should remain receptive to engaging with Tribes and Indigenous Peoples on Indigenous Knowledge across all missions, developing a list of key issue areas will help Agencies to most effectively deploy resources to train staff, identify actions that should be subject to the practices described below, and recognize opportunities to collaborate with Tribes. Where resources are available, Agencies should train staff in these project areas to develop and maintain skills and practices relevant to working with Indigenous Knowledge, Tribal Nations, and Indigenous Peoples. Several Tribal organizations and other external Indigenous-led groups have developed guidance documents and trainings for decisionmakers<sup>53</sup> and Agencies should look for opportunities for Tribes and Indigenous Peoples to lead and participate in training for Agencies.

*2. Plan Ahead and Consider Developing an Indigenous Knowledge Plan.* Where an agency identifies a decision-making process or research project in which Indigenous Knowledge may be relevant, the agency should develop an Indigenous Knowledge plan as early as possible. Agencies may need to consult and collaborate with Tribal Nations and Indigenous Peoples initially to determine if, and how, Indigenous Knowledge could be relevant to the agency's decision-making process. The plan should describe engagement between the Federal agency and Tribes and Indigenous Peoples, including early and sustained engagement to ensure that Indigenous Knowledge shared with the agency is considered throughout, consistent with the expectations of the applicable Tribal Nations and Indigenous Peoples. Agencies should develop a schedule and identify resources to support each phase, and should assign staff the appropriate qualifications, experience, and training to participate in the process. Additionally, Agencies should communicate the plan and timelines for engagement so that all parties understand expectations. Planning should also be sensitive to culturally appropriate norms, including meaningful inclusion of youth and Elders, honoring and respecting Indigenous languages, and meeting on Tribes' or Indigenous Peoples' lands. For Federally recognized Tribes, Nation-to-Nation consultation may be the most appropriate venue for engagement.

In developing Indigenous Knowledge plans, Agencies should also be aware that Tribes and Indigenous Peoples may possess Indigenous Knowledge that is sensitive, sacred, or belongs to certain families or clans. To the extent possible, Agencies should identify and adopt mechanisms to address the concerns of Tribes and Indigenous Peoples about privacy or potential threats to natural or cultural resources, or they may fear loss of access or desecration of lands and waters if certain information is shared with others.<sup>54</sup> Tribal leaders or designated representatives are best

<sup>53</sup> E.g., Ellam yua et al., (2022). *A Framework for Co-production of Knowledge in the Context of Arctic Research*, 27 Ecology and Soc'y 34, <https://doi.org/10.5751/ES-12960-270134>; Minn. Dep't of Transportation (2022). *Tribal-State Relations Training*, <http://www.dot.state.mn.us/tribaltraining>.

<sup>54</sup> First Archivist Circle (Apr. 9, 2007). *Protocols for Native American Archival Materials*, <https://www2.nau.edu/libnap-p/protocols.html> ("For Native American communities, the public release of or access to specialized information or knowledge—gathered with and without informed consent—can cause irreparable harm. . . Each community will understand and use the term 'culturally sensitive' differently, although there are



positioned to identify what Indigenous Knowledge is sensitive or sacred, and Agencies should recognize that Indigenous Knowledge freely shared by one community may be closely guarded by another.<sup>55</sup>

Therefore, during the planning process, Agencies should consult with Federal agency legal counsel regarding the agency's obligations under the Freedom of Information Act (FOIA)<sup>56</sup> and other public disclosure laws, and legal authorities that may apply to inclusion of Indigenous Knowledge.

3. *Conduct Initial Meetings.* Prior to any discussion on sharing Indigenous Knowledge, Agencies should set clear expectations for how the information will be conveyed to the agency and included in the agency's decision-making process. Agencies should discuss and make clear the potential benefits and risks of sharing Indigenous Knowledge, including the potential for public release under FOIA and other public disclosure obligations.<sup>57</sup> This should be an ongoing discussion and Agencies should account for personnel turnover to ensure any information provided is provided with a full understanding of the implications of FOIA and other public disclosure obligations. Agencies should also collaborate with Tribal Nations and Indigenous Peoples to develop alternative means for information sharing that reduces the risk of disclosure and results in mutually beneficial process for the agency and Tribal Nations and Indigenous Peoples. Agencies should also provide information to Tribes and Indigenous Peoples to facilitate informed decision making as to whether Indigenous Knowledge should be shared with the agency and discuss approaches that may be available to protect Tribal or Indigenous interests. Such information includes a description of the Federal action or policy, relevant legal authorities and any limitations arising from those authorities, and potential impacts to Tribal or Indigenous interests foreseeable to the agency.

An initial meeting should be reciprocal. It is also an opportunity for the Tribe or Indigenous Peoples to identify additional considerations or interests important to them. Together, Agencies, Tribes, and Indigenous Peoples can explore what specific aspect of Indigenous Knowledge could inform or contribute to the Federal policy or action.

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broad areas of common agreement for Native Americans about this issue Indigenous Knowledge may need to be protected to prevent against unauthorized use, commercial misuse, cultural misappropriation, or inadvertent disclosure. There have been many cases of misrepresentation and exploitation of sacred and secret information.”).

<sup>55</sup> ACHP (May 3, 2021). Traditional Knowledge and the Section 106 Process: Information for Agencies and Other Participants, <https://www.achp.gov/sites/default/files/2021-05/TraditionalKnowledgePaper5-3-21.pdf> (“Each Indian tribe or NHO may have their own information about a specific place that differs from that of another Tribe or NHO, because each has a unique culture and history. In many cases, different Tribes or NHOs may have different views or beliefs about the same place. The fact that each may hold different traditional knowledge about the same place does not invalidate that knowledge. Additional outreach and consultation may be required for a Federal agency to engage with multiple Tribes to better understand a single place; such additional efforts enrich the process and better inform decision-making.”).

<sup>56</sup> 5 U.S.C. § 552.

<sup>57</sup> See U.S. Department of Justice (2022). Risk Management and Tribal Consultation Report, at 4 and 11, [https://www.justice.gov/d9/fieldable-panel-panes/basic-panes/attachments/2022/06/08/risk\\_management\\_tribal\\_consultation\\_final\\_report\\_march\\_2022.pdf](https://www.justice.gov/d9/fieldable-panel-panes/basic-panes/attachments/2022/06/08/risk_management_tribal_consultation_final_report_march_2022.pdf).



An initial meeting is also a forum for Agencies to communicate Federal agency legal obligations associated with the application of Indigenous Knowledge with Tribes and Indigenous Peoples, including the potential for public disclosure of Indigenous Knowledge. Tribes and Indigenous Peoples need to understand Federal legal obligations to make informed decisions about whether, when, and how to share information. Federal agency legal obligations should be made clear, including the extent to which the agency will be able to maintain the confidentiality of Indigenous Knowledge if it is shared and what protocols the agency will use to store, share, and access sensitive documents, information, or data. This information should be disclosed by Agencies before Tribes and Indigenous Peoples share Indigenous Knowledge. Any information about the Tribe or Indigenous Peoples' relevant protocols, laws, or resolutions related to the sharing of Indigenous Knowledge should also be discussed by Agencies, Tribes, and Indigenous Peoples. For long-term or more complex projects, Agencies may consider whether a written document could be effective to document agreements about the process and partnership.

4. Include Indigenous Knowledge into Federal Decision Making and Research. Agencies should obtain consent from Tribal Nations and Indigenous Peoples prior to including Indigenous Knowledge in Federal policy, research, or decision making. After securing consent to access Indigenous Knowledge, Agencies should ensure that Indigenous Knowledge is appropriately included in the Federal action. Inclusion of Indigenous Knowledge in Federal decision making and research starts with the recognition that Indigenous practices and methodologies underlie Indigenous Knowledge. Accordingly, Indigenous Knowledge should guide metrics and evaluation; Agencies do not need to judge, validate, or evaluate Indigenous Knowledge using other forms of knowledge in order to include Indigenous Knowledge in Federal policy, research, or decision making.

In documenting research and decision making, Agencies should prepare documents that recognize Indigenous Knowledge genealogy and credit ideas, insights, and other forms of Indigenous Knowledge as applied. Additionally, documents should describe how Indigenous Knowledge was applied to reach the final product or decision. When possible and appropriate, Agencies should work with Tribes and Indigenous Peoples to present the decision or research including Indigenous Knowledge in Indigenous voice and style.<sup>58</sup>

Agencies should follow up with Tribes and Indigenous Peoples to describe how Indigenous Knowledge was included in the final Federal action and share outcomes. The nature of subsequent communications will vary. Agencies should recognize the specific context of the Federal action, such as the relationship between the parties, the parties' desires, and the specific characteristics of the final decision or product.

5. Regularly Coordinate with other Agencies to Facilitate Information Sharing. Many Agencies have deep experience in the above promising practices and can serve as resources for other agencies. Interagency information sharing and coordination may enhance practices for including Indigenous Knowledge in Federal processes across the Government.

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<sup>58</sup> See e.g., ACHP (May 3, 2021). Traditional Knowledge and the Section 106 Process: Information for Federal Agencies and Other Participants, which that lists indigenous perspectives of Indigenous Knowledge in their own words, Appendices A and B.

## *B. Opportunities to Include Indigenous Knowledge in Federal Contexts*

Agencies may find Indigenous Knowledge provides valuable insights across various programs and missions. This section provides common contexts in which Agencies may encounter Indigenous Knowledge and specific practices that Agencies should employ when considering whether and how to include Indigenous Knowledge in decision-making processes<sup>59</sup>:

*1. Federal Research Design and Implementation.* Agencies should respect that Tribes and Indigenous Peoples may have different preferences for their involvement in research and that the same Tribe or Indigenous Peoples may have varying preferences depending on the issue or project. While respecting this diversity of preference, there are promising practices from literature, listening sessions, and researchers' experiences, which should be considered when developing research policy, planning, and implementation.<sup>60</sup>

The following practices based on Indigenous research methodologies may be of particular use to Agencies in this context:<sup>61</sup> Additional references are included in Appendix F.

- **Responsibility:** It is the responsibility of the research team to understand the sociopolitical landscape of a research site and research questions and to follow ethical best practices *whether or not* the research is considered human subject research. Honestly and clearly identify the purpose and motivation for the research.
- **Research Approach:** Select appropriate research methods and parameters for the problem, the cultural context, and weaving together knowledge systems, as well as for the use of data and dissemination of results.
- **Relevance:** When working in or with Indigenous communities, ensure research is relevant to the experiences, perspectives, priorities, and ways of knowing and living in these communities.
- **Representation:** Indigenous communities should lead in the research process by sharing what is important to their community.
- **Respect:** Have respect for Indigenous communities and cultures, multiple ways of knowing, and Indigenous Knowledge holders.
- **Relationship:** Invest time and resources in engagement necessary to understand the issues, concerns, and needs from the perspective of partners. Acknowledge the nature of

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<sup>59</sup> Internationally, the Department of State, in concert with Federal agencies, works to ensure the rights of Indigenous Peoples are protected and respected. When international issues are implicated, it may be appropriate for agencies to coordinate with the Department of State, and ensure that positions and language are consistent with U.S. international commitments. Indigenous Knowledge can make significant contributions to the United States' diplomatic activities and to partner countries' development goals, as well as to broader global health, agriculture, climate stability and food and water security. Federal employees engaged in foreign relations or foreign development programs should invite Indigenous Peoples to be partners in the diplomatic or development process, and strengthen consultations to ensure that Indigenous Knowledge informs agreements, impact analyses, strategies, program design, implementation, and monitoring and evaluation.

<sup>60</sup> See Ranalda L. Tsosie et al. (2022). *The Six Rs of Indigenous Research*, 33(4) Tribal Coll. J. Of Am. Indian Higher Educ, <https://tribalcollegejournal.org/the-six-rs-of-indigenous-research>.

<sup>61</sup> Id.

relationships (people-to-people and people-to-environment) as they relate to Indigenous Knowledge.

*2. Federal Grants and Other Funding Opportunities.* Agencies should ensure that Indigenous Knowledge is recognized, valued, and included in Federal grant making and other funding opportunities, which can improve the accessibility of funding to Tribes and Indigenous Peoples and facilitate exploration of new lines of research and development. Agencies should review the range of phases of Federal grant making, including solicitation, review and selection, administration, and closeout and reporting. Agencies may provide technical assistance to Tribes and Indigenous Peoples to clearly establish expectations for financial assistance and other funding opportunities. In addition, Agencies should be cognizant of burdensome requirements during pre- and post-selection award phases and collaborate with Tribes and Indigenous Peoples to ensure Federal requirements are achieved through a process that is accessible for Tribes and Indigenous Peoples and allows for Indigenous Knowledge to be included.

In developing Requests for Proposals (RFP), as appropriate, Agencies should account for the following: (1) that the RFP language, frame, and requirements for the research project or funding opportunity do not exclude the potential for Indigenous Knowledge and other forms of evidence to be included; (2) that the RFP language regarding professional qualifications includes Indigenous Knowledge and Indigenous Peoples, who are the experts in their culture and lifeways; and (3) that the RFP language does not unnecessarily treat natural and cultural resources as separate entities or exclude one while including the other. Regarding the latter, Indigenous Peoples' cultural practices are informed by Indigenous Knowledge and frequently incorporate plant and animal communities, mineral sources, landforms, water bodies, and other tangible elements of the natural environment. Thus, Agencies should be aware that certain natural resources are frequently valued as cultural resources by many Indigenous Peoples. For RFPs that include requests for engagement and planning with Tribes and Indigenous Peoples, Agencies should recognize relationship building needs, such as longer timeframes. When appropriate, Tribes and Indigenous Peoples should also be included in the creation of RFPs and Indigenous Knowledge holders should be included in the proposal review process. When possible, Knowledge holders should be appropriately compensated for the participation at rates equal to those of agency and academic scientists and other technical experts.

When funding is awarded, especially through competitive grant processes, Agencies should ensure that the methods, people, and grant assessment process are not biased against proposals that include Indigenous Knowledge. To guard against such biases, Agencies can ensure that Indigenous Knowledge holders are included in funding allocation decisions, and can ensure that merit-based funding decisions involve scoring rubrics that value Indigenous Knowledge on par with other forms of evidence and methods of inquiry. Agencies should also develop evaluation criteria that includes Indigenous methodologies and approaches to ensure that Indigenous Knowledge is not inappropriately disadvantaged in the review process.

Finally, Agencies are encouraged to offer funding for co-production of knowledge whenever feasible, to ensure that Indigenous Knowledge and multiple perspectives are included in all



stages of the research process, and to ensure that research results are relevant to decisions made by Agencies, Tribes, and Indigenous Peoples.<sup>62</sup>

3. *Federal Rulemaking.* Agencies should consider Indigenous Knowledge in promulgating regulations, issuing guidance, or adopting policies with Tribal or Indigenous implications, consistent with legal authorities. There are a number of opportunities for Indigenous Knowledge to potentially inform Federal rulemaking. Indigenous Knowledge can serve as a source of evidence that explains why a rule is necessary, an approach has been selected, or alternative approaches have been rejected. For example, rules covering species protection and land use could include Indigenous Knowledge to explain why certain protections are necessary.

Additionally, Agencies often prepare a benefit-cost analysis to analyze proposed regulations, which may include intangible or difficult-to-monetize benefits and costs, distributional effects, and an analysis of environmental justice impacts. Indigenous Knowledge also may provide relevant insights in these analyses in describing a particular rule's costs and benefits based on the expertise of Tribes and Indigenous Peoples. The White House Office of Management and Budget (OMB)'s guidance on regulatory analysis<sup>63</sup> notes that Agencies should seek out opinions of those who may be affected by regulation or who have special knowledge or insight into the regulatory issues. In addition, Indigenous Knowledge can be a source of original information that Agencies may use to conduct benefit-cost analyses, consistent with OMB's guidance.

For example, many regulatory impact analyses of Federal rules include an analysis of the rule's distributional effects and/or an environmental justice assessment. These analyses discuss how benefits or adverse impacts of the Federal action affect different communities. Indigenous Knowledge may be relevant to include in such analyses. For example, including Indigenous Knowledge may more accurately capture the impact of a rule on culturally or ecologically significant land.

Agencies should also include Indigenous Knowledge as an aspect of best available science. A number of legal standards requiring the consideration of scientific information can also permit the consideration of Indigenous Knowledge. Agencies should consider evaluating the standards applicable to their work to decide whether the consideration of Indigenous Knowledge should be referenced explicitly in agency regulations or policies. Indeed, several Agencies have already included Indigenous Knowledge in their definitions of best available science or expanded their understanding of what can be included as evidence in agency decision making.<sup>64</sup> For example, the U.S. Forest Service allows "Native knowledge" to be considered during the National Forest System land management planning process.<sup>65</sup> The National Marine Fisheries Service's (NMFS)

<sup>62</sup> Ellam yua et al. (2022). *A Framework for Co-production of Knowledge in the Context of Arctic Research*, 27 Ecology & Soc'y 34, <https://doi.org/10.5751/ES-12960-270134>; see also discussion *infra* Section 3 (providing additional information and recommendations on co-production of knowledge).

<sup>63</sup> OMB Circular A-4, (Sept. 17, 2003). *Regulatory Analysis*, [https://www.whitehouse.gov/wp-content/uploads/legacy\\_drupal\\_files/omb/circulars/A4/a-4.pdf](https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf).

<sup>64</sup> NOAA Fisheries & National Ocean Service (2019). *Guidance and Best Practices for Engaging and Incorporating Traditional Ecological Knowledge in Decision-Making*, 3, [https://media.fisheries.noaa.gov/dam-migration/traditional\\_knowledge\\_in\\_decision\\_making\\_508\\_compliant.pdf](https://media.fisheries.noaa.gov/dam-migration/traditional_knowledge_in_decision_making_508_compliant.pdf).

<sup>65</sup> 36 C.F.R. §§ 219.4(a)(3) & 219.19 (defining "Native Knowledge").



efforts around Ecosystem-Based Fisheries Management is another example of Indigenous Knowledge being applied as best available science;<sup>66</sup> the Alaska Fisheries Science Center produces annual Ecosystem Status Reports informed by local knowledge and observations.<sup>67</sup>

4. *Federal Use of Science and Evidence*. Agencies can also include Indigenous Knowledge in Federal contexts governed by the following evidence and information quality statutes:

- *Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act)*.<sup>68</sup> The Evidence Act calls on Agencies to strategically plan and organize evidence building, data management, and data access functions to ensure an integrated and direct connection to data and evidence needs.<sup>69</sup> As relevant and appropriate, Agencies should include Indigenous Knowledge as a form of evidence and consider Indigenous Knowledge throughout evidence life cycles, including in developing priority questions on agency Learning Agendas, in building evidence through inclusive methodologies, such as community-engaged research, and when using evidence to improve government effectiveness.<sup>70</sup>
- *Information Quality Act*.<sup>71</sup> The Information Quality Act (IQA) is designed to ensure that the Federal Government relies on information of appropriate quality for the decision being made. Under the IQA and OMB's associated guidance documents,<sup>72</sup> influential information, including Highly Influential Scientific Assessments (HISAs), is required to provide sufficient transparency about data and methods to allow reproducibility of the results.<sup>73</sup> Indigenous Knowledge can be relevant to and may be used in HISA

<sup>66</sup> Nat'l Oceanic & Atmospheric Admin. Fisheries, (June 15, 2022). *Human Integrated Ecosystem Based Fishery Management, Research Strategy 2021-2025: Executive Summary*, <https://www.fisheries.noaa.gov/human-integrated-ecosystem-based-fishery-management-research-strategy-2021-2025-executive-summary>.

<sup>67</sup> E.g., North Pacific Fishery Management Council (2021). *Ecosystem Status Report 2021, Eastern Bering Sea*, 238-39 (Elizabeth Siddon), <https://apps-afsc.fisheries.noaa.gov/refm/docs/2021/ebsecosys.pdf>.

<sup>68</sup> Pub. L. No. 115-435, 132 Stat. 5529 (codified in Titles 5 and 44 of the U.S. Code).

<sup>69</sup> Office of Mgm't & Budget, Exec. Office of the President (June 10, 2019). OMB Circular M-19-23, *Phase 1 Implementation of the Foundations for Evidence-Based Policymaking Act of 2018*, 13, <https://www.whitehouse.gov/wp-content/uploads/2019/07/M-19-23.pdf>; Office of Mgm't & Budget, Exec. Office of the President, OMB Circular M-21-27, (June 30, 2021). *Evidence-Based Policymaking: Learning Agendas and Annual Evaluation Plans*, 19, <https://www.whitehouse.gov/wp-content/uploads/2021/06/M-21-27.pdf>.

<sup>70</sup> See e.g., Melanie Nind (2020). *Inclusive Research: Research Methods*; Melanie Nind (2014). *What is Inclusive Research?*; Kristine Andrews, Jenita Parekh, & Shantai Peckoo (2019). *How to Embed a Racial and Ethnic Equity Perspective in Research: Practical Guidance for the Research Process*, Child Trends, [https://www.childtrends.org/wpcontent/uploads/2019/09/racialethnicequityperspective\\_childtrends\\_October2019.pdf](https://www.childtrends.org/wpcontent/uploads/2019/09/racialethnicequityperspective_childtrends_October2019.pdf).

<sup>71</sup> Pub. L. No. 106-554, 114 Stat 2763, § 515 (codified at 44 U.S.C. §§ 3504(d)(1), 3516).

<sup>72</sup> E.g., OMB, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*; Republication, 67 Fed. Reg. 8452, (Feb. 22, 2002); OMB, *Final Information Quality Bulletin for Peer Review*, 70 Fed. Reg. 2664, (Jan. 14, 2005); OMB (April 24, 2019). *Memorandum to the Heads of Executive Departments and Agencies, Improving Implementation of the Information Quality Act*, M-19-15.

<sup>73</sup> OMB (2001). *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, § 3(b)(2); OMB (April 24, 2019). *Memorandum to the Heads of Executive Departments and Agencies, Improving Implementation of the Information Quality Act*, M-19-15.



documents.<sup>74</sup> As relevant and appropriate, Indigenous Knowledge should be evaluated during review processes to ensure that conclusions are supported by evidence of appropriate quality.<sup>75</sup>

## **VI. Conclusion**

Agencies should apply this guidance as a foundation for Agencies to consult and collaborate with Tribal Nations and Indigenous Peoples on the inclusion of Indigenous Knowledge in Federal decision making and research and consider whether agency-specific policies are appropriate.

In addition, the Appendices that follow provide a wealth of information, operational recommendations, and additional resources to support Agencies in implementing this guidance.

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<sup>74</sup> See OMB (April 24, 2019). Memorandum to the Heads of Executive Departments and Agencies, Improving Implementation of the Information Quality Act, M-19-15.

<sup>75</sup> See Appendix C (providing a draft survey on inclusion of Indigenous Knowledge in the National Climate Assessments).

### *Appendix A. Examples of Indigenous Knowledge Application and Collaboration Between the Federal Government and Tribes and Indigenous Peoples*

The below examples illustrate mutually beneficial collaborations that are possible between Agencies and Tribal Nations and Indigenous Peoples. These examples include input from and reflect the perspectives of the Indigenous organizations, individuals, and Agencies involved in these particular efforts.

Indigenous Knowledge Informs Federal Climate Change Research, Policy, and Resilience  
Climate change is affecting human and natural environments around the world. Tribes and Indigenous Peoples face disproportionate and unique climate-related risks, as climate change threatens cultural and ceremonial practices, place-based identities, sources of traditional food and medicine, and sovereignty and security. Climate impacts, such as increased frequency and severity of certain extreme weather events, ocean acidification, sea level rise, and changes in the timing of ice melt or spring thaw, disrupt subsistence hunting, gathering, fishing, and traditional agricultural practices by threatening culturally important ecosystems. Indigenous Peoples may have disproportionately high levels of pre-existing health conditions, such as asthma, diabetes, or cardiovascular disease, and many still experience physical and mental health impacts of historical trauma. Climate change exacerbates these health disparities and can create new threats to human health and safety.<sup>76</sup> For example, recent evidence suggests that Indigenous women and children may bear the brunt of climate-related stressors and economic and food insecurities, and that climate impacts can exacerbate sexual and gender-based violence.<sup>77</sup>

The Federal Government has a key role to play in understanding, mitigating, and adapting to climate-related risks and impacts. Recognizing that Tribes and Indigenous Peoples are often the first to observe or anticipate climate-related changes to ecosystems and the environment, and this knowledge contributes to better understanding, prediction, and adaptation to climate change, the Fourth National Climate Assessment included Indigenous Knowledge in its assessment of the impacts of climate change on the Nation and described the role Indigenous Knowledge systems can play in developing comprehensive climate adaptation strategies.<sup>78</sup> Further, each of the 10 regional chapters in the Fourth National Climate Assessment includes at least one example of climate impacts or adaptation practices unique to Tribes and Indigenous peoples, many of which are based on Indigenous Knowledge local to that region. Other examples of the application of

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<sup>76</sup> See Fourth National Climate Assessment, 572–603 (explaining how indigenous peoples can also be affected uniquely and disproportionately by climate change); see also Bharat H. Desai et al. (2021). *Role of Climate Change in Exacerbating Sexual and Gender-Based Violence against Women: A New Challenge for International Law*, Environmental Policy and Law 51, p. 142, available at [https://www.un.org/sexualviolenceinconflict/wp-content/uploads/2021/10/report/role-of-climate-change-in-exacerbating-sexual-and-gender-based-violence-against-women-a-new-challenge-for-international-law/epl\\_2021\\_51-3\\_epl-51-3-epl210055\\_epl-51-epl210055.pdf](https://www.un.org/sexualviolenceinconflict/wp-content/uploads/2021/10/report/role-of-climate-change-in-exacerbating-sexual-and-gender-based-violence-against-women-a-new-challenge-for-international-law/epl_2021_51-3_epl-51-3-epl210055_epl-51-epl210055.pdf); see also Kristen Vinyeta, Kyle Powys Whyte, & Kathy Lynn (2015). *Climate Change Through an Intersectional Lens: Gendered Vulnerability and Resilience in Indigenous Communities in the United States*. Gen. Tech. Rep. PNW-GTR-923. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p. DOI: 10.2737/PNW-GTR-923.

<sup>78</sup> See generally, Fourth National Climate Assessment (providing an example, where indigenous knowledge was included in the assessment of the impacts of climate change on the nation and describes the role indigenous knowledge systems can play in developing comprehensive climate adaptation strategies).



Indigenous Knowledge in Federal climate-related decision making include the listing of species under the Endangered Species Act, habitat designation decisions made by USFWS and NOAA, and consideration of Indigenous Knowledge in the Bureau of Indian Affairs' climate resilience investments.

#### Bears Ears National Monument Co-Management

Bears Ears National Monument has a rich cultural heritage and is sacred to many Tribal Nations who rely on these lands for traditional and ceremonial uses. Recognizing this history and the expertise of Tribal Nations, the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) have entered into a cooperative agreement with five Tribes—the Hopi Tribe, Navajo Nation, Ute Mountain Ute Tribe, Ute Indian Tribe of the Uintah and Ouray Reservation, and the Pueblo of Zuni—to collaborate on the management of the 1.36 million acre monument. This agreement outlines a common vision for managing Bear Ears National Monument and protecting these sacred lands, giving Tribes the opportunity to participate in the management of their ancestral lands. The Tribes are applying their knowledge to a variety of management challenges facing the monument including drought, erosion, and visitation to protect and restore the monument objects and values. Honoring the Nation-to-Nation relationship, this model ensures that Indigenous Knowledge and Tribal perspectives are at the forefront of joint decision-making for the monument.

#### The Northern Bering Sea Climate Resilience Area

The Inupiat, St. Lawrence Island Yupik, Central Yup'ik and Cup'ik peoples have lived interconnected with marine and coastal ecosystems in the Northern Bering Sea region for millennia. The Northern Bering Sea Climate Resilience Area, established by Executive Order 13754 in 2016 and reinstated by President Biden in 2021 through Executive Order 13990, provides an example of Indigenous values informing policy and the potential for including Traditional Knowledge in decision making.<sup>79</sup> The Northern Bering Sea Climate Resilience Area provides a model for bridging different value systems coming from Indigenous Knowledge and other forms of knowledge through a framework that includes a Federal Bering Task Force and a Bering Intergovernmental Tribal Advisory Council. The Task Force and Advisory Council are charged with conserving the region's ecosystem, including those natural resources that provide important food security to the people of the region. Tribes, regional Alaska native non-profit organizations, Elders, and Traditional Knowledge holders from across the northern Bering Sea region are working with the Federal Government to address concerns about rapid climate change and the need for solutions that take a whole-of-government approach to build equity into decision making for the Northern Bering Sea region. This process also provides a pathway for Tribal voices that have been historically underserved in decision-making processes.

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<sup>79</sup> Executive Order 13,754: Northern Bering Sea Climate Resilience, 81 Fed. Reg. 90,669 (Dec. 9, 2016); Press Release: Biden-Harris Administration Brings Arctic Policy to the Forefront (Sept. 24, 2021), <https://www.whitehouse.gov/ostp/news-updates/2021/09/24/biden-harris-administration-brings-arctic-policy-to-the-forefront-with-reactivated-steering-committee-new-slate-of-research-commissioners/>.

### Sweetgrass Shared Governance in Acadia National Park

In Acadia National Park, the National Park Service is working with citizens of Wabanaki Tribes—the Aroostook Band of Mi'kmaq, the Houlton Band of Maliseets (Wolastogiyik), the Passamaquoddy (Peskotomuhkati) Tribe at Sipayik, the Passamaquoddy Tribe at Indian Township, and the Penobscot Indian Nation—on shared governance and research on sweetgrass harvesting.<sup>80</sup> Wabanaki people have harvested sweetgrass for generations. Research in Acadia, guided by Indigenous methodologies, reinforces what Wabanaki people have always known: that harvesting sweetgrass through a Wabanaki philosophy enhances sweetgrass abundance. Wabanaki knowledge, and the gatherers who generate this knowledge, are leading National Park Service research and management strategies that will enable restoration of Wabanaki harvesting within Acadia National Park.<sup>81</sup>

### ACHP Advances Indigenous Knowledge in Policy on Burial Sites, Human Remains, and Funerary Objects

The Advisory Council on Historic Preservation (ACHP) strives to ensure Agencies implement their work in harmony with the National Historic Preservation Act. The ACHP is incorporating Indigenous Knowledge into its updated *Policy Statement on Burial Sites, Human Remains, and Funerary Objects*<sup>82</sup> to elevate consideration of Indigenous Knowledge in Federal historic preservation decisions. Incorporating Indigenous Knowledge into the policy statement will help Indigenous People elevate their concerns during the Section 106 process, which requires Agencies to consider the effects of projects they carry out, approve, or fund, on historic properties throughout the country. The policy statement was developed through a series of nationwide listening sessions, presentations, and Nation-to-Nation consultation. ACHP policy statements dictate how ACHP staff advise Agencies, state and local preservation officials, Indian Tribes, and Native Hawaiian organizations, among others, regarding the Section 106 process. By updating its *Policy Statement on Burial Sites, Human Remains, and Funerary Objects* the ACHP will advance how Indigenous Knowledge is considered in the Section 106 consultation process in a manner that can positively effectuate Federal decision making around historic preservation in projects all around the country.

<sup>80</sup> U.S. Forest Service, Southern Research Station (2018). *Traditional Ecological Knowledge Helps Researchers Understand the Effects of Plant Harvesting*, <https://srs.fs.usda.gov/research/2018-research-highlights/highlight.php?Id=traditional-knowledge>.

<sup>81</sup> See e.g., Abbe Museum, (June 1, 2019). *Wabanaki Sweetgrass Harvesting in Acadia National Park*, [Blog], <https://www.abbemuseum.org/blog/2018/6/21/a8ox8s8wxde6nenklfm77gayl60h87>.

<sup>82</sup> See ACHP (2022). *Updating ACHP's Policy Statement on Burial Sites, Human Remains, and Funerary Objects*, <https://www.achp.gov/treatment-burial-sites>.



### USAID Supports Community-led Preservation of Indigenous Genetic Resources

USAID's Feed the Future project, Buena Milpa,<sup>83</sup> was a sustainable intensification project that leveraged the potential of the Indigenous Three Sisters method of companion planting.<sup>84</sup> Through Buena Milpa, USAID's partners worked with mostly Indigenous Mayan farmers in the highlands of Guatemala to set crop improvement priorities based on community needs, conserve and improve agrobiodiversity, and promote other sustainable agriculture techniques. Buena Milpa participated in yearly agrobiodiversity fairs where farmers traded varieties of maize, potatoes, beans, yam, and other crops, and children learned about the importance of protecting and conserving nature as well as native maize varieties.<sup>85</sup> Buena Milpa leveraged Indigenous Knowledge to improve community resilience and productivity, and it enabled Indigenous People to lead the strategic design and implementation of development programs to meet their needs. Through established community seed banks, the maize genetic resources, which are Indigenous intellectual property, were preserved and maintained within the communities where they originated. These local community seed banks serve as a sustainable base of biodiversity conservation and participative breeding efforts to foster innovation, reduce food insecurity and malnutrition, and increase sustainability of maize-based food systems. Farmers affiliated with the Buena Milpa project participated in a study of the relationship between intercropping and nutritional productivity which found that this style of agriculture is not only more productive than mono-cropped maize in terms of food produced per hectare, but also produces maize that is of higher nutritional value.<sup>86</sup> Buena Milpa was implemented by the International Maize and Wheat Improvement Center which, like other large seed banks of its kind, makes germplasm

<sup>83</sup> See generally CIMMYT (2022). [Webpage]. <https://www.cimmyt.org/projects/buena-milpa/> (providing background information regarding the Buena Milpa Project managed in collaboration with the U.S. Agency for International Development's Feed the Future program).

<sup>84</sup> See Robin Wall Kimmerer (2013). *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. The Three Sisters is an example of a story that transmits Indigenous Knowledge across millennia related to feeding a community and thriving in a landscape. The intercropping or companion method of planting corn, beans, and squash together, commonly called the Three Sisters, has been studied and described by scholars in anthropology, history, and agriculture studies for many years. Planted as a triad, the corn stalks offer climbing bean vines support as they reach for sunlight from the earth. The beans pump beneficial nitrogen from the air back into the soil, fertilizing the corn and squash. The squash's broad, spiny leaves protect the bean plants from predatory animals and shade the ground from the heat of the sun. The story offers a tangible example of the application of Indigenous Knowledge in agriculture that was unfamiliar to the colonists arriving on the shores of Massachusetts who knew only straight rows of single species, and thus, wrongly characterized Indigenous agriculture as inefficient farming. In fact, the companion method provides more abundance than monocropping, which is the norm in modern agriculture. The Three Sisters also offer a metaphor for understanding how Indigenous Knowledge and western science may be woven together. This metaphor highlights that, when woven together in a space of ethical and equitable knowledge production, Indigenous Knowledge and western science mutually support each other while retaining their distinct characteristics. In this space, Tribes and Indigenous Peoples and Federal scientists and staff can collaborate to solve problems and answer questions of mutual concern.

<sup>85</sup> See CIMMYT (November 30, 2015). Press Release, Buena Milpa participates in the lamb and agrobiodiversity fairs in Guatemala, <https://www.cimmyt.org/news/buena-milpa-participates-in-the-lamb-and-agrobiodiversity-fairs-in-guatemala/>.

<sup>86</sup> Lopez-Ridaura, Santiago, Luis Barba-Escoto, Cristian A. Reyna-Ramirez, Carlos Sum, Natalia Palacios-Rojas and Bruno Gerard (2021). "Maize intercropping in the milpa system. Diversity, extent and importance for nutritional security in the Western Highlands of Guatemala." *Scientific Reports* (2021)11:3696. <https://doi.org/10.1038/s41598-021-82784-2>.



(seed) available for both farmers and Western scientific researchers. In some cases, germplasm developed by smallholder farmers has been the source material for important crop-saving and agronomic improvement technologies deployed by bioscience firms and redistributed to farmers worldwide.<sup>87</sup> Such collaborative innovations highlight the need to track the provenance of seeds and genetic resources and to respect and reward the intellectual and creative contributions of Indigenous and local peoples on par with that of Western bioscience.

#### Papahānaumokuākea Marine National Monument

The Papahānaumokuākea Marine National Monument, located in the Northwestern Hawaiian Islands, was established to protect the inextricable link between nature and culture. The legal underpinnings of the monument establish the tangible and intangible ancestral, cultural, and biophysical values of place as equally significant, integral, and important, and require the co-management agencies to cooperate to protect them. The Monument is co-managed by four co-trustee agencies: the Department of Commerce (via NOAA), The Department of the Interior (via USFWS), the State of Hawai'i (via the Hawai'i Department of Land and Natural Resources) and the Office of Hawaiian Affairs.

The Monument, established in 2006, and its predecessor, the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve established in 2000, offers many lessons for place-based and knowledge-based engagement of Indigenous and local communities to achieve effective management that can be applied elsewhere. The success is based on engagement of the knowledge holders and communities from which the knowledge has been generated. Native Hawaiians have consistently led, and continue to lead, the development and governance of the Monument. The Monument's founding management values, principles, and approaches are based both in Native Hawaiian knowledge and practices, and in contemporary conservation and management. The inclusion of Indigenous Peoples at the decision-making table from the start of the process allowed for the successful structure for establishment and management of the Monument.

#### Federal Research Engagement to Support Tribal Climate Adaptation Indigenous Fire Stewardship, and Eco-cultural Revitalization

The USDA Forest Service Pacific Southwest Research Station (PSWRS) is a cooperative research partner with the Karuk and other tribes of northwestern California. The Karuk Tribe develops and pursues research partnerships with other Tribal entities, Federal, state, academic, and non-governmental organizations regarding the inclusion of Indigenous Knowledge in the full cycle of research. These partnerships are to guide, inform, and document natural resources management and co-management strategies. The Karuk Tribe initially formed a research

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<sup>87</sup> Muleta, Kebede T., Terry Felderhoff, Noah Winans, Rachel Walstead, Jean Rigaud Charles, J. Scott Armstrong, Sujana Mamidi, Chris Plott, John P. Vogel, Peggy G. Lemaux, Todd C. Mockler, Jane Grimwood, Jeremy Schmutz, Gael Pressoir, and Geoffrey P. Morris. (2022) "The recent evolutionary rescue of a staple crop depended on over half a century of global germplasm exchange." *Science Advances* 8, eabj4633.



collaborative, the Karuk-University of California, Berkeley Collaborative,<sup>88</sup> and then its own research program, which is now managed by the Karuk Department of Natural Resources' Pikyav Field Institute. Through the Institute's *Practicing Pikyav Process for Collaborative Research Projects*,<sup>89</sup> the Tribe invites, solicits, considers, accepts, approves, directs, and oversees the methods and conditions of the research that involves their Indigenous Knowledge, beliefs, practices and other cultural properties and interests. Research topics have focused on Tribal agroforestry, food security, wildland fire, Indigenous fire stewardship, and climate adaptation as landscape restoration strategies across jurisdictions that cover Karuk Aboriginal Territory and include both natural and social sciences as well as socio-ecological systems that integrate the two. As these research collaborations have evolved, the Tribe is increasingly identifying and conducting research based on its identified stewardship and co-management needs and priorities and collaborating with the USDA Forest Service and other Federal and state agencies, university, and non-governmental organization partners.

PSWRS developed an agreement in 2006 with the Karuk Tribe to support the development of the Karuk Eco-Cultural Resources Management plan,<sup>90</sup> which lays out a long-term adaptive management strategy for the lands, waters, and cultural/natural resources within and adjacent to Karuk Aboriginal Territory, 95% of which is occupied by the Six Rivers and Klamath National Forests. PSWRS conducts research with the Karuk Tribe and other partners to help fulfill the US Forest Service's trust responsibility towards Federally recognized Tribes. These research products develop, synthesize, and document the Best Available Scientific Information—which includes both Western and Indigenous sciences—for lands, water, and resources management decisions.

In 2013, the Karuk Tribe and U.C. Berkeley, along with the Yurok and Klamath Tribes, scaled up their collaboration, conducting research focused on food security and the ways in which the Tribal community accesses food resources, including traditional foods derived off land concurrent with Tribal and National Forest System jurisdictions.<sup>91</sup> A significant finding was that the Tribal community faces substantial challenges in accessing, securing, and having conditions in place to steward traditional foods.<sup>92</sup> To enhance their Tribal food security and sovereignty, the Karuk and other Tribes conduct forestry and wildland fire management that foster opportunities

<sup>88</sup> See generally, Karuk – UC Berkeley Collaborative, [Home Page] (2022), available at <https://nature.berkeley.edu/karuk-collaborative/> (including links to projects, news, publications and other resources).

<sup>89</sup> Karuk Tribe and University of California at Berkeley, (Oct. 12, 2017). *Practicing Pikyav: A Guiding Policy for Collaborative Projects and Research Initiatives with the Karuk Tribe*, Karuk-UC Berkeley Collaborative. Berkeley, CA: University of California at Berkeley, [https://nature.berkeley.edu/karuk-collaborative/?page\\_id=165](https://nature.berkeley.edu/karuk-collaborative/?page_id=165) (noting that as of 2021 the policy is under revision).

<sup>90</sup> Karuk Tribe Department of Natural Resources, (June 15, 2010), *Eco-Cultural Resources Management Plan*, draft web posting available at [https://www.karuk.us/images/docs/dnr/ECRMP\\_6-15-10\\_doc.pdf](https://www.karuk.us/images/docs/dnr/ECRMP_6-15-10_doc.pdf).

<sup>91</sup> Sowerwine, J., Sarna-Wojcicki, D., Mucioki, M., Hillman, L., Lake, F. And Friedman, E. (2019). *Enhancing Food Sovereignty: A Five-Year Collaborative Tribal-University Research and Extension Project in California and Oregon*. Journal of Agriculture, Food Systems, and Community Development, 9(B), pp.167-190, [https://www.karuk.us/images/docs/hr-files/Tribal%20Constitution%207\\_19\\_2008.pdf](https://www.karuk.us/images/docs/hr-files/Tribal%20Constitution%207_19_2008.pdf).

<sup>92</sup> Karuk Tribe and University of California at Berkeley (2019). Klamath Basin Food System Assessment: Karuk Tribe Data. Karuk-UC Berkeley Collaborative. Berkeley, CA: University of California at Berkeley. <https://nature.berkeley.edu/karuk-collaborative/wp-content/uploads/2019/05/Food-Security-Assessment-Web-5.20.pdf>



for Indigenous fire stewardship and cultural burning.<sup>93</sup> Such efforts promote Tribally valued habitats for food, medicinal, fiber, and basketry resources and relations. Tribal-led landscape restoration strategies that promote drought-tolerant and fire-adapted vegetation, coupled with beneficial fire use, are regionally applicable climate adaptation strategies that increase the resistance of socio-cultural and ecological systems, and resilience of local communities and environments to climate-related stressors.<sup>94</sup> Aspects of these efforts are embodied in the Western Klamath Restoration Partnership, which the Karuk and the U.S. Forest Service co-lead with two other local non-governmental organizations.<sup>95</sup>

#### Tribal-led Research and Conservation of Eulachon

Coastal Indian Tribes, including the Cowlitz Indian Tribe, have fished and traded for eulachon (*Thaleichthys pacificus*) in tributaries of the Columbia River since time immemorial. NOAA and the Cowlitz Indian Tribe—who initiated the project—applied Tribal oral histories to reconstruct historic distributions of the eulachon.<sup>96</sup> The Cowlitz Tribal oral histories aided in identifying key spawning habitat, timing of eulachon runs, and run differences between tributaries, and directly informed NOAA’s decision to list a population segment as threatened under the Endangered Species Act.<sup>97</sup> The project facilitated joint efforts to identify and protect critical habitat, increase abundance of the species, and promote species recovery.<sup>98</sup>

#### Indigenous Knowledge in the USDA Tribal Climate Adaptation Menu

The Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing USDA and Tribal, academic, InterTribal, and government entities in Minnesota, Wisconsin, and Michigan, provides a framework to integrate Indigenous and Traditional knowledge, culture, language, and history into the climate adaptation planning process.<sup>99</sup> Developed as part of the Climate Change Response Framework, the Tribal Climate Adaptation Menu is designed to work with the Northern Institute of Applied Climate Science Adaptation

<sup>93</sup> Lake, Frank K. (2021). *Indigenous Fire Stewardship: Federal/Tribal Partnerships For Wildland Fire Research and Management*. Fire Management Today. 79(1): 30-39, <https://www.fs.usda.gov/treesearch/pubs/62060>.

<sup>94</sup> Mucioki, M., Sowerwine, J., Sarna-Wojcicki, D., Lake, F.K. and Bourque, S. (2021). *Conceptualizing Indigenous Cultural Ecosystem Services (ICES) and Benefits Under Changing Climate Conditions in the Klamath River Basin and Their Implications For Land Management and Governance*. Journal of Ethnobiology, 41(3), pp. 313-330.

<sup>95</sup> Lake, F.K., Parrotta, J., Giardina, C.P., Davidson-Hunt, I. And Uprety, Y. (2018). *Integration of Traditional and Western Knowledge In Forest Landscape Restoration*. Forest Landscape Restoration, pp. 198-226; Routledge. Hessburg, P.F., Prichard, S.J., Hagmann, R.K., Povak, N.A. and Lake, F.K. (2021). *Wildfire and Climate Change Adaptation of Western North American Forests: A Case For Intentional Management*. Ecological Applications, 31(8), p.e02432.

<sup>96</sup> Nathan Reynolds & Marc Romano, (2013). *Traditional Ecological Knowledge: Reconstructing Historical Run Timing and Spawning Distribution of Eulachon through Tribal Oral History*, J. Of NW. Anthropology.

<sup>97</sup> National Marine Fisheries Services (Sept. 2017). *Recovery Plan for the Southern Distinct Population Segment of Eulachon*, <https://repository.library.noaa.gov/view/noaa/15989>.

<sup>98</sup> NOAA Fisheries (May 2019). *Guidance and Best Practices for Engaging and Incorporating Traditional Ecological Knowledge in Decision-Making*, <https://www.legislative.noaa.gov/docs/19-065933-Traditional-Knowledge-in-Decision-Making-Documents-Signed.pdf>.

<sup>99</sup> Tribal Adaptation Menu Team (2019). *Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu*. Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisconsin, <https://forestadaptation.org/sites/default/files/Tribal%20Climate%20Adaptation%20Menu%2011-2020%20v2.pdf>.



Workbook, and as a stand-alone resource. The Menu is an extensive collection of climate change adaptation actions for forest planning, organized into tiers of general and more specific ideas. The Menu also includes a companion Guiding Principles document, which describes detailed considerations for working with Tribes and Indigenous Peoples. While this first version of the Menu was created based on Ojibwe and Menominee perspectives, languages, concepts, and values, it was intentionally designed to be adaptable to other Indigenous communities, allowing for the incorporation of their language, knowledge, and culture. Primarily developed for the use of Indigenous communities, Tribal natural resource agencies, and their non-Indigenous partners, this Tribal Climate Adaptation Menu may be useful in bridging communication barriers for non-Tribal persons or organizations interested in Indigenous approaches to climate adaptation and the needs and values of Tribal communities.

#### Including Indigenous Knowledge in Rivercane Restoration

The U.S. Army Corps of Engineers (USACE) Tribal Nations Technical Center of Expertise (TNTCX) has facilitated the formation of a Rivercane Restoration Alliance with support from the USACE Sustainable Rivers Program and The Nature Conservancy. The Alliance is a network of Tribal community members, artisans, academics, and state and Federal land managers with a shared vision of combining Traditional Indigenous Ecological Knowledge and other forms of knowledge to achieve successful rivercane recovery throughout the historic range (mostly within the southeastern United States, ranging from Florida to eastern Texas in the south, parts of the Midwest, and north to New York). In October 2021, nearly 200 of the Alliance members participated in a virtual workshop designed to explore the relationship that the participants have with rivercane, draft conceptual ecological models to educate others, and create a network for rivercane devotees to share information and opportunities. Through the workshop, Tribal communities shared the role rivercane plays in their language and cultural heritage preservation, as well as insights into how the Traditional Knowledge surrounding rivercane and its relationship with the environment has been ignored. The success of this project is directly attributable to co-developing the workshop agenda and strategy with Tribal partners. The Rivercane Restoration Alliance project has provided a model for forming alliances for other culturally significant species. For example, the TNTCX is leading a similar project for tule. The intent is to share the importance of these species, have land managers begin actively managing the species, and provide Tribal partners with access to the species.

#### Understanding Climate Impacts and Adaptation Around Arctic Rivers

The Arctic Rivers Project is a collaboration between researchers from the U. S. Geological Survey, University of Colorado, Boulder, National Center for Atmospheric Research, Yukon River Inter-Tribal Watershed Council, Institute for Tribal Environmental Professionals at Northern Arizona University, University of Saskatchewan, and University of Waterloo funded by the National Science Foundation's Navigating the New Arctic Program.<sup>100</sup> The goal of the

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<sup>100</sup> See generally, University of Colorado, Boulder, (2022). [Website], <https://www.colorado.edu/research/arctic-rivers/about> (providing background information on the National Science Foundation's Navigating the New Arctic Program).



project is to weave together Indigenous Knowledge, monitoring, and the modeling of climate, rivers (flows, temperature, ice), and fish to improve understanding of how Arctic rivers, ice transportation corridors, fish, and communities might be impacted by and adapt to climate change. The project started January 1, 2020 and runs through December 31, 2024. The project team has diverse experience in water quality monitoring, river ice prediction, streamflow, climate change, fish, and Tribal environmental issues. Working with the Yukon River Inter-Tribal Watershed Council, a non-profit group representing 74 Tribes & First Nations dedicated to the preservation of the Yukon River Watershed, USGS developed initial research questions, guided by the executive board of directors and by Tribal and First Nations representatives. The overarching research question is: *How will societally important fish habitat and river-ice transportation corridors along Arctic rivers be impacted by climate change including permafrost degradation, transformed groundwater dynamics, shifts in streamflow, and altered river temperatures?* This question is intentionally broad to allow the research team to co-develop more specific research questions with the project's Indigenous Advisory Council and ultimately the communities that the project team works with. The project will host an Arctic Rivers Summit in Anchorage, Alaska in December 2022 to convene up to 150 Tribal, Indigenous, and First Nation leaders, community members, managers, and knowledge holders, western scientists, Federal, state, and provincial agency representatives, academic partners, non-governmental organizations, and others. This workshop will facilitate discussion of the current and potential future states of Alaskan and Yukon rivers and fish and how we can adapt.

#### Accelerating Indigenous-Led Climate Adaptation in California Through USGS

Indigenous Peoples and Tribal Nations are on the front lines of climate change, and are also leading in the implementation of adaptation strategies. Traditional, or cultural, burning has been recognized as a robust adaptation strategy, increasing the resilience of ecosystems and the local communities that depend on them for economic and social well-being. Indigenous Peoples have stewarded their ancestral homelands for millennia using cultural burning, which is practiced primarily for maintaining the abundance of culturally-significant plants and animals for food, livelihoods, ceremonial, medicinal, and other purposes. These approaches can be complementary to other ecosystem restoration based on other forms of knowledge, such as thinning and prescribed burning and management treatments, practices that themselves often originate from traditional land stewardship. Across California, Indigenous Peoples continue to steward lands in a variety of jurisdictions, including public domain allotments, private land, homesteads, and other protected lands or conservation covenants.

In collaboration with the North Fork Mono Tribe, the Southwest Climate Adaptation Science Center (SW CASC), a collaborative Federal-university partnership between USGS and seven academic institutions from across the Southwest, affiliated researchers are engaging in a series of multi-stakeholder, hands-on traditional burning efforts that include pre- and post-burn vegetation monitoring to improve understanding of the efficacy of these treatments. They also are assessing the climate vulnerability of Indigenous-stewarded lands in California, while participating in a resilience planning effort with Indigenous agricultural producers. The project seeks to better understand the condition of and climate risks to these lands so that Indigenous Knowledge



systems can be more effectively applied and sustained for future generations. Products from this project include modeling tools to assess climate vulnerability, comprehensive accounting of Indigenous producers across jurisdictions, and resilience planning documents to better support Indigenous land stewards in decision making.

This work fosters Tribal-university-government knowledge exchange, as well as Tribal Nation-to-Nation exchange on environmental stewardship and climate adaptation. Ultimately, the project aims to cultivate a decision and policy-making environment that accelerates Indigenous-led climate adaptation, particularly in the form of cultural burning. The project advances partnerships between the USGS, Southwest CASC and affiliated universities, and Tribal Nations and communities, particularly the North Fork Mono Tribe, while strengthening relationships between Tribal citizens, the public, and state and Agencies in California and across the Southwest.

#### Indigenous Data Sovereignty and Public Accessibility in the Arctic

The Exchange for Local Observations and Knowledge of the Arctic (ELOKA) is a repository for Indigenous data and Knowledge built upon principles of Indigenous data sovereignty.<sup>101</sup> Funded by the National Science Foundation, ELOKA responds to twin imperatives: The Federal mandate to make data collected with Federal dollars public and broadly accessible, and the right of Tribes and Indigenous Peoples to control their own knowledge. ELOKA fosters collaboration between scientists and Indigenous Arctic residents to record, preserve, and share Indigenous Knowledge in ways that are ethical, equitable, and community-driven. An Indigenous Advisory Committee ensures that ELOKA is responsive to community needs for data management and visualization.

ELOKA is an example of data infrastructure and capacity building that simultaneously serves the needs of Indigenous communities and Agencies. In partnership with communities, ELOKA creates a variety of products to share and display data, including transcripts of interviews with Alaska Native Elders, audio files, photographs, quantitative environmental data, and Indigenous place names linked to digital maps. The Yup'ik Environmental Knowledge Project, hosted by ELOKA, is a web-based atlas of Indigenous place names from Southwest Alaska.<sup>102</sup> The geolocated names have associated sound files as well as photos, videos, and narratives. Access to the atlas was originally restricted to protect sensitive data, but community representatives voted unanimously to make the data publicly accessible.<sup>103</sup> ELOKA is built upon a foundation of trust and mutual respect, and demonstrates how Agencies can support open data policies while respecting Indigenous data sovereignty.

<sup>101</sup> See generally, ELOKA, University of Colorado, Boulder.2022. [Website], <https://eloka-arctic.org/about-eloka> (providing background information on ELOKA).

<sup>102</sup> ELOKA, University of Colorado, Boulder (2022). Yup'ik Atlas [Mapping Tool], <https://eloka-arctic.org/communities/yupik/atlas/index.html>.

<sup>103</sup> Noor Johnson, Colleen Strawhacker, and Peter Pulsifer (2022). Data Infrastructures, Indigenous Knowledge, and Environmental Observing in the Arctic. In *The Nature of Data: Infrastructures, Environments, Politics*, edited by Jenny Goldstein and Eric Nost. University of Nebraska Press.

#### The National Institutes of Health Tribal Health Research Programs

The National Institutes of Health (NIH) Native American Research Centers for Health (NARCH) program supports research projects through awarding of grants directly to Tribes and Tribal organizations, who then can choose to partner with research-intensive academic institutions to conduct health research important to Tribal communities. For more than 20 years, the program has funded Tribally driven research, including on environmental health and climate change, as well as Indigenous student and faculty development with the aim of developing a cadre of scientists actively researching health challenges facing these populations.<sup>104</sup>

NIH also funds the Intervention Research to Improve Native American Health (IRINAH) program. The program was created to develop, adapt, and test the effectiveness of health-promotion and disease-prevention interventions in populations. The long-term goal of the program is to reduce mortality and morbidity in Native American communities and provides a forum for discussions on the challenges and opportunities to improve health in Native American populations across the United States. Research conducted with the Blackfeet and Nez Perce Tribes, supported by this program, applied Indigenous Knowledge by exploring the efficacy of woodstove filters and education as interventions to reduce respiratory disease among Tribal Elders. Instead of focusing on avoiding the health risks associated with the burning of poorly seasoned wood, investigators used storytelling to highlight important culturally-based use of fire coupled with public health messaging.<sup>105</sup>

#### Traditional Wisdom Helps Shape CDC Health Promotion and Disease Prevention Programs

Tribal Leaders have expressed that traditional teaching and culturally grounded health promotion are not widely understood by Agencies, and often are not supported with financial and technical resources. To address this concern, Centers for Disease Control and Prevention (CDC) seeks to actively include Indigenous Tribal Ecological Knowledge, or Traditional Wisdom, into all areas of its mission. Below are several successful examples of these efforts. The Native Diabetes Wellness Program Traditional Foods Project<sup>106</sup> was a community-designed program sponsored by the CDC and the Indian Health Service advised by the Tribal Leaders Diabetes Committee,<sup>107</sup> a committee of Tribal Leaders that recommends funding priorities in support of Tribally driven programs to address chronic disease prevention. The Native Diabetes Wellness Program Traditional Foods Project was effective at including traditional approaches, values, education,

<sup>104</sup> See generally, National Institute of General Medical Science (2022). Native American Research Centers for Health (NARCH), [https://nigms.nih.gov/capacity-building/division-for-research-capacity-building/native-american-research-centers-for-health-\(narch\)](https://nigms.nih.gov/capacity-building/division-for-research-capacity-building/native-american-research-centers-for-health-(narch)) (providing background information on the NARCH program).

<sup>105</sup> Ward TJ, Semmens EO, Weiler E, Harrar S, Noonan CW. (2017). Efficacy of Interventions Targeting Household Air Pollution From Residential Woodstoves. *J Expo Sci Environ Epidemiol* 27(1):64–71, PMID: 26555475, <https://doi.org/10.1038/jes.2015.73> (detailing an example of a project under this program).

<sup>106</sup> See generally, Centers for Disease Control and Prevention (Aug. 16, 2021). Traditional Foods: Traditional Food Project, 2008-2014, available at <https://www.cdc.gov/diabetes/ndwp/traditional-foods/index.html> (providing background information on the Native Diabetes Wellness Program Traditional Foods Project).

<sup>107</sup> See generally, Indian Health Service (2022). Tribal Leaders Diabetes Committee, available at <https://www.ihs.gov/sdpi/tldc/> (providing background information on the Tribal Leaders Diabetes Committee).



and experiences in its health promotion in communities.<sup>108</sup> For example, Tribal Leaders suggested creating stories for children about preventing diabetes, since there were few stories. Diabetes had been largely unknown until recent decades, and incorporating traditional knowledge and culture alongside Western medicine led the CDC to develop the children's Eagle Book Series.<sup>109</sup> The Project ultimately led to significant work by Tribes across the continent to support food sovereignty and reclaim traditional foods.<sup>110</sup> One specific example of CDC work with Tribes on this project includes the book *Qaqamiigux*, which offers stories, experiences, recipes, and wisdom shared by Indigenous elders, food preparers, and hunters from the Aleutian and Pribilof Islands Region of Alaska about the use of traditional and local foods, from the land and sea. In another example of CDC inclusion of traditional wisdom, the CDC followed the advice of its Tribal Advisory Committee, which recommended convening a group of knowledgeable cultural advisors to increase understanding of the role of Tribal practices and culturally grounded strategies and activities in health promotion. This advice helped the CDC craft program strategies to reach the desired public health capacity and health outcomes in Indigenous communities and led the CDC to provide grants for Tribal Practices for Wellness in Indian Country.<sup>111</sup>

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<sup>108</sup> Satterfield D, Debruyne L, Santos M, Alonso L, Frank M. (2016). Health Promotion and Diabetes Prevention in American Indian and Alaska Native Communities — Traditional Foods Project 2008-2014. MMWR Suppl;65place\_holder\_for\_early\_release:4–10. DOI: <http://dx.doi.org/10.15585/mmwr.su6501a3external icon>.

<sup>109</sup> Satterfield D, Debruyne L, Dodge Francis C, Allen A. (2014). A Stream is Always Giving Life: Communities Reclaim Traditional Ways to Prevent Diabetes and Promote Health. *Am Indian Culture Research J.*, 38:157–90; *see generally*, Centers for Disease Control and Prevention (Aug. 3, 2021). Native Diabetes Wellness Program, Eagle Books, available at <https://www.cdc.gov/diabetes/ndwp/eagle-books/index.html> (providing background information on Eagle Books).

<sup>110</sup> *See generally*, Centers for Disease Control and Prevention (Aug. 16, 2021). Traditional Foods: Traditional Food Project, 2008-2014, available at <https://www.cdc.gov/diabetes/ndwp/traditional-foods/index.html> (providing background information on the Native Diabetes Wellness Program Traditional Foods Project).

<sup>111</sup> *See e.g.*, Centers for Disease Control (2022). Tribal Practices for Wellness in Indian Country Notice of Funding Opportunity – CDC – RFA – DP22-2201, <https://www.cdc.gov/healthytribes/tpwic/funding-opportunities/TPWIC-NOFO-2201.htm>.

*Appendix B: Select Federal Agency Guidance Documents on Indigenous Knowledge*

<b>Agency</b>	<b>Title</b>
U.S. Department of Agriculture	<p>Indigenous Stewardship Methods and NRCS Conservation Practices (2010)  <a href="https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/plants/?cid=stelprdb1045246">https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/plantsanimals/plants/?cid=stelprdb1045246</a></p> <p>Traditional Ecological Knowledge: An Important Facet of Natural Resources Conservation (2004)  <a href="https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045244.pdf">https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045244.pdf</a></p>
U.S. Forest Service	<p>Traditional and Local Ecological Knowledge About Forest Biodiversity in the Pacific Northwest (2008)  <a href="https://www.fs.usda.gov/treesearch/pubs/29926">https://www.fs.usda.gov/treesearch/pubs/29926</a></p> <p>Exploring the Role of Traditional Ecological Knowledge in Climate Change Initiatives (2013)  <a href="https://www.fs.fed.us/pnw/pubs/pnw_gtr879.pdf">https://www.fs.fed.us/pnw/pubs/pnw_gtr879.pdf</a></p>
Department of the Interior	<p>Guidelines for Considering Traditional Knowledges in Climate Change Initiatives (2014)  <a href="https://toolkit.climate.gov/tool/guidelines-considering-traditional-knowledges-climate-change-initiatives">https://toolkit.climate.gov/tool/guidelines-considering-traditional-knowledges-climate-change-initiatives</a></p>
Bureau of Ocean Energy Management	<p>Traditional Knowledge webpage and infographic  <a href="https://www.boem.gov/about-boem/traditional-knowledge">https://www.boem.gov/about-boem/traditional-knowledge</a></p>
National Park Service	<p>Introduction to Traditional Ecological Knowledge in Wildlife Conservation (2016)  <a href="https://irma.nps.gov/DataStore/DownloadFile/554622">https://irma.nps.gov/DataStore/DownloadFile/554622</a></p>
U.S. Fish and Wildlife Service	<p>Traditional Ecological Knowledge for Application by Service Scientists (2011)  <a href="https://www.fws.gov/media/traditional-ecological-knowledge-fact-sheet">https://www.fws.gov/media/traditional-ecological-knowledge-fact-sheet</a></p>
National Oceanic and Atmospheric Administration	<p>Engaging and Incorporating Traditional Ecological Knowledge in Decision-Making (2019)  <a href="https://media.fisheries.noaa.gov/dam-migration/traditional_knowledge_in_decision_making_508_compliant.pdf">https://media.fisheries.noaa.gov/dam-migration/traditional_knowledge_in_decision_making_508_compliant.pdf</a></p> <p>Traditional &amp; Local Knowledge: A vision for the Sea Grant Network (2018)  <a href="https://seagrant.noaa.gov/Portals/1/Network%20Visioing/Traditional%26Local_110118.pdf">https://seagrant.noaa.gov/Portals/1/Network%20Visioing/Traditional%26Local_110118.pdf</a></p>



U.S. Environmental Protection Agency	<p>Considering Traditional Ecological Knowledge (TEK) During the Cleanup Process (2017)  <a href="https://www.epa.gov/tribal-lands/considering-traditional-ecological-knowledge-tek-during-cleanup-process">https://www.epa.gov/tribal-lands/considering-traditional-ecological-knowledge-tek-during-cleanup-process</a></p> <p>Policy on Environmental Justice for Working with Federally Recognized Tribes and Indigenous Peoples (2014)  <a href="https://www.epa.gov/environmentaljustice/epa-policy-environmental-justice-working-Federally-recognized-tribes-and">https://www.epa.gov/environmentaljustice/epa-policy-environmental-justice-working-Federally-recognized-tribes-and</a></p>
Advisory Council on Historic Preservation	<p>Traditional Knowledge and the Section 106 Process: Information for Agencies and Other Participants (2021)  <a href="https://www.achp.gov/sites/default/files/2021-05/TraditionalKnowledgePaper5-3-21.pdf">https://www.achp.gov/sites/default/files/2021-05/TraditionalKnowledgePaper5-3-21.pdf</a></p> <p>The Advisory Council on Historic Preservation's Statement On Its Trust Responsibility  <a href="https://www.achp.gov/sites/default/files/2018-06/TheACHPsStatementOnItsTrustResponsibility.pdf">https://www.achp.gov/sites/default/files/2018-06/TheACHPsStatementOnItsTrustResponsibility.pdf</a></p> <p>Consultation with Native Hawaiian Organizations In The Section 106 Review Process: A Handbook  <a href="https://www.achp.gov/sites/default/files/2021-06/ConsultationwithIndianTribesHandbook6-11-21Final.pdf">https://www.achp.gov/sites/default/files/2021-06/ConsultationwithIndianTribesHandbook6-11-21Final.pdf</a></p>

*Appendix C. Example of Approach to Indigenous Knowledge as Source Materials in Highly Influential Scientific Assessments Under the Information Quality Act*

The Information Quality Act (IQA) requires Agencies to verify that data and information used in Federal products and reports are of a sufficient quality for the purposes they are being used, with quality defined as utility, transparency, objectivity, and integrity. This includes the requirement for information to demonstrate a capability of being reproduced by independent assessment or analysis using similar methods. The Office of Management and Budget (OMB) requires that products that are characterized as Influential Scientific Information (ISI) or Highly Influential Scientific Assessments (HISA) are consistent with more specific standards of peer review and reproducibility, including full documentation and public transparency into their development process. When a HISA draws conclusions that are based on the synthesis of evidence (including Indigenous Knowledge), all evidence presented should have qualities that are consistent with the principles of the Information Quality Act and OMB's associated guidance.<sup>112</sup>

The draft survey provided below is an example of how one Federal program seeks to ensure that Indigenous Knowledge can be considered consistent with the IQA. The survey was developed by the U.S. Global Change Research Program as an update to guidance for the authors of the National Climate Assessment. An author considering Indigenous Knowledge will answer the questions on the survey. If the answer to each survey item is "yes," the Indigenous Knowledge may be considered as a source of information for the National Climate Assessment.

Indigenous Knowledge Information Quality Act Checklist

**Transparency & Traceability**

**Relationality**

- ☐ Ability to substantiate that the information is part of a relationship or kinship of people across generations interconnected to social, spiritual, cultural, and natural environmental or ecological systems
- ☐ The information is tied to a specific location or a specific type of habitat, environmental media, or biological species

**Clarity**

- ☐ Theories, scope, approach, methods, and context is clearly described and any differences in outcomes from those developed using other approaches are discussed, including assumptions and limitations

**Objectivity**

**Context**

- ☐ The information is understood and applied in a way that is respectful to and consistent

<sup>112</sup> OMB (2001). Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies, § 3(b)(2) (2001); OMB (Apr. 24, 2019). Circular M-19-15, Improving Implementation of the Information Quality Act, <https://www.cdo.gov/assets/documents/OMB-Improving-Implementation-of-Info-Quality-Act-M-19-15.pdf>.



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with the cultural, spiritual, and environmental context of the Indigenous Peoples who own it

- ☐ The knowledge is used or applied in the assessment in an objective, accurate, clear, complete, and unbiased manner
- ☐ There was meaningful engagement, communication, collaboration, or co-production between the assessment author and the knowledge holder(s)

#### **Valuation**

- ☐ The inherent use and value of the information and expertise of the knowledge holders, including lived experience, is retained and respected
- ☐ Language and names within the information, in which Indigenous Knowledge and values may be nested, are preserved
- ☐ The Indigenous Knowledge is considered through an Indigenous lens, voice, or style and weaved together with other forms of evidence without converting or forcing the knowledge into non-Indigenous frameworks

#### **Purpose**

- ☐ The original purpose for creation of this information is understood, considered, and respected when used in the assessment
- ☐ The interpretation of the information is consistent with the intent

#### **Integrity & Security**

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##### **Consent**

- ☐ Information owners granted free, prior, informed consent for including this information in assessment, and maintain control over collection, ownership, and use of data derived from sources
- ☐ Reference in the assessment is free of any culturally sensitive information that the knowledge holders do not want made public, including consideration of how documentation may be subject to or released under the Freedom of Information Act

##### **Respect**

- ☐ The author made clear how the information will be protected to prevent against unauthorized use, cultural misappropriation, or inadvertent disclosure, including how data and knowledge sovereignty and governance are being respected and not disclosed in contexts outside the assessment

#### **Reproducibility**

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##### **Continuity**

- ☐ Ability to substantiate that the information consists of repeated observations or understandings built and maintained over time and shared or passed down through generations while maintaining continuous formats (e.g., oral, written, song, dance, visual formats, etc.)

##### **Validation**

- ☐ Practices for ensuring quality control and validation are appropriate to the nature of the source information, as determined by the Indigenous knowledge holders from which the information comes, such as through iterative, equitable dialogue on the

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interpretation of findings by community members, co-researchers, or collective knowledge systems

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*Appendix D: Federal Departments and Agencies Contributing to the Interagency Working Group on Indigenous Knowledge*

- Department of Agriculture
  - U.S. Forest Service
- Department of Commerce
  - National Oceanic and Atmospheric Administration
- Department of Defense
  - Army Corps of Engineers
- Department of Education
- Department of Energy
- Department of Health and Human Services
  - Centers for Disease Control and Prevention
  - National Institutes of Health
  - Indian Health Service
- Department of Homeland Security
  - Federal Emergency Management Agency
- Department of Housing and Urban Development
- Department of the Interior
  - Bureau of Indian Affairs
  - U.S. Fish and Wildlife Service
  - U.S. Geological Survey
  - National Park Service
- Department of Justice
- Department of Labor
- Department of State
- Department of Transportation
- Department of Veterans Affairs
- U.S. Agency for International Development
- U.S. Environmental Protection Agency
- Advisory Council on Historic Preservation
- National Archives and Records Administration
- National Science Foundation
- Smithsonian Institution
- White House
  - Office of Management and Budget
  - Domestic Policy Council
  - Office of Domestic Climate Policy
  - White House Council on Native American Affairs

*Appendix E: Additional References and Resources for Promising Practices to Apply When Considering Indigenous Knowledge in Federal Processes*

This appendix was developed with input from the Interagency Working Group on Indigenous Knowledge and provides additional resources and examples of how Agencies have partnered with Tribes to apply promising practices consistent with this guidance to include Indigenous Knowledge in Federal decision making. This Appendix is not intended to be an exhaustive list, but rather provide additional resources and examples for Agencies to consider when implementing the guidance.

Planning Ahead

- Traditional & Local Knowledge: A vision for the Sea Grant Network. August 31, 2018, 31pp.  
[https://seagrants.noaa.gov/Portals/1/Network%20Visioning/Traditional%26Local\\_110118.pdf](https://seagrants.noaa.gov/Portals/1/Network%20Visioning/Traditional%26Local_110118.pdf)
- The BIA Tribal Resilience Program in 2021 planned for feedback from Tribes and Indigenous Peoples that included partners that have relationships in the climate space. They also included culturally important practices in the agenda, such as an Elder opening.  
<https://www.bia.gov/news/tribal-listening-sessions-climate-discretionary-grants>

Engaging Youth and Elders

- Inuit Circumpolar Council Alaska. 2019. The Role of Providing-Inuit Management Practices: Youth, Elders, Active Hunters and Gatherers Workshop Report, Anchorage, AK. <https://iccalaska.org/wp-icc/wp-content/uploads/2022/03/YEAH-Workshop-Report.pdf>
- Alaska Native Knowledge Network. 2000. Guidelines for Respecting Cultural Knowledge. Assembly of Alaska Native Educators, adopted February 1, 2000, Anchorage, AK. <http://ankn.uaf.edu/publications/knowledge.html>
- Inuit Circumpolar Council Alaska. 2019. The Role of Providing-Inuit Management Practices: Youth, Elders, Active Hunters and Gatherers Workshop Report, Anchorage, AK. <https://iccalaska.org/wp-icc/wp-content/uploads/2022/03/YEAH-Workshop-Report.pdf>

Including Indigenous Knowledge in Federal Decision Making

- EPA. 2012. Environmental Justice Analysis in support of the National Pollutant Discharge Elimination System (NPDES) General permits for Oil and Gas Exploration on the Outer Continental Shelf and Contiguous State waters in the Beaufort Sea, Alaska and oil and gas exploration facilities on the Outer Continental Shelf in the Chukchi Sea, Alaska. EPA, Region 10, Alaska Operations Office. Final October 2012. 52pp.
- In 2019, USFS executed an Integrated Fire Management Memorandum of Understanding (MOU) with the Karuk Tribe and BIA to document cooperation between the parties concerning wildland fire incidents and clearly define roles and responsibilities. This MOU demonstrates how Agencies can integrate Indigenous Knowledge into fire



management strategies to better protect tribal values.

[https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fseprd637505.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd637505.pdf).

- USFWS hosted a two-day workshop with Indigenous Knowledge holders during the ESA process for walrus. This knowledge was included within a Bayesian Belief Network model that analyzed the various relationships between walruses and factors that influenced their growth and abundance. Gregor, R., C. Beaudrie, and N. Kaechele. Appendix D. Alaskan Native Ecological Knowledge Workshop Report in MacCracken, J.G, et. al. 2017. Final species status assessment for the Pacific walrus (*Odobenus rosmarus divergens*), May 2017 (Version 1.0). USFWS Anchorage, Alaska. pages 251-275. <https://polarbearsience.files.wordpress.com/2019/04/maccracken-et-al-2017-walrus-species-status-assessment-final-usfws-may-2017.pdf>
- The BIA Tribal Resilience Program hosts a yearly camp focused on building capacity for Tribes and Indigenous Peoples by bringing youth from around the country together to learn and share about practices and approaches for resilience planning that includes both western science and Indigenous Knowledge. <https://www.bia.gov/bia/ots/tribal-resilience-program/youth>

#### Considering Shared Management Structures

- U.S. Department of the Interior Secretarial Order No. 3342 [https://www.doi.gov/sites/doi.gov/files/uploads/so3342\\_partnerships.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/so3342_partnerships.pdf)
- Washburn, K.K. 2022. Facilitating Tribal co-management of Federal public lands. Wisconsin Law Review 263:263-328 <https://wlr.law.wisc.edu/wp-content/uploads/sites/1263/2022/04/14-Washburn-Camera-Ready.pdf>
- Papahānaumokuākea Marine National Monument (see Appendix D)
- Inuit Circumpolar Council-Alaska.2020. Food Sovereignty and Self-Governance: Inuit Role in Managing Arctic Marine Resources, Anchorage, AK. <https://www.inuitcircumpolar.com/project/food-sovereignty-and-self-governance-inuit-role-in-managing-arctic-marine-resources/>
- Cape Breton University, <http://www.integrativescience.ca/Principles/TwoEyedSeeing/>; Bartlett, C., M. Marshall, and A. Marshall. 2012. Two-eyed seeing and other lessons learned within a co-learning journey of bringing together Indigenous and mainstream knowledges and ways of knowing. Journal of Environmental Studies and Sciences 2:331-
- Ellam Yua, J. Raymond-Yakoubian, R. Aluaq Daniel. and C. Behe. 2022. A framework for co-production of knowledge in the context of Arctic research. Ecology and Society 27(1):34. <https://doi.org/10.5751/ES-12960-270134>
- Kutz, S., and M. Tomaselli. 2019. “Two-eyed seeing” supports wildlife health: bridging Indigenous and scientific knowledge improves wildlife surveillance and fosters reconciliation. Science 364(6446):1135-1137. <https://doi.org/10.1126/science.aau6170>
- Tribal-led Research and Conservation of Eulachon (see Appendix D)

### Recognizing Indigenous Methodologies

- L.D. Harris and J. Wasilewski, Indigeneity, an alternative worldview: Four R's (relationship, responsibility, reciprocity, redistribution) vs Two P's (power and profit), *Systems Research and Behavioral Science*, 21(5), pp. 498-503.
- Smith, L.T., 2021. *Decolonizing methodologies: Research and indigenous peoples*. Bloomsbury Publishing.
- Wilson, S., 2008. *Research is ceremony: Indigenous research methods*. Fernwood Publishing
- Whyte, K.P., Brewer, J.P. & Johnson, J.T. 2016. Weaving Indigenous science, protocols and sustainability science. *Sustainability Science*. 11, 25–32.
- Haring, C. P., Altmann, G. L., Suedel, B. C., & Brown, S. W. (2021). Using Engineering With Nature®(EWN®) principles to manage erosion of watersheds damaged by large-scale wildfires. *Integrated Environmental Assessment and Management*, 17(6), 1194-1202. <https://setac.onlinelibrary.wiley.com/doi/full/10.1002/ieam.4453>

### Honoring Indigenous Languages

- Ayaprun Elitnaurvik, Bethel, Alaska is an example of a Yup'ik immersion school that meets state and Federal requirements for education and provides the education that includes Yupiit Piciryarait. Western approaches and Yup'ik ways of being are included across the K-8 learning environment. [https://ayaprun.lksd.org/about/ayaprun\\_elitnaurvik](https://ayaprun.lksd.org/about/ayaprun_elitnaurvik)
- Departments of the Interior, Education, and Health and Human Services launch multi-agency initiative to protect and preserve Native languages, aligning efforts for language preservation programs. <https://nativelanguagesummit.org>
- Memorandum of Agreement on Native Languages, signed November 10, 2021, <https://www.doi.gov/sites/doi.gov/files/native-american-language-moa-11-15-2021.pdf>
- Name changes reflected in the Geographic Names System, some recent examples include changing McKinley to Denali and Wade Hampton County to Kusilvak County, and Barrow to Utqiagvik <https://edits.nationalmap.gov/apps/gaz-domestic/public/summary/1414314>

### Applying Indigenous Voice and Style

- Younging, G. 2018. *Elements of Indigenous Style: A Guide for Writing By and About Indigenous Peoples*. Brush Education Inc. 151pp.
- ACHP style guide
- Field Museum in Chicago exhibit “Native Truths: Our Voices, Our Stories” co-created through contribution of many knowledge systems taking a collaborative approach. Indian Country Today report: Indian Country Today report: <https://indiancountrytoday.com/news/native-truths-our-voices-our-stories-exhibition-opens>

### Citing Indigenous Knowledge

- Jantarasami, L.C., R. Novak, R. Delgado, E. Marino, S. McNeeley, C. Narducci, J. Raymond-Yakoubian, L. Singletary, and K. Powys Whyte, 2018: *Tribes and Indigenous*



Peoples. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 572–603. doi: 10.7930/NCA4.2018.CH15

- MacLeod, Lorisia. 2021. “More Than Personal Communication: Templates For Citing Indigenous Elders and Knowledge Keepers”. KULA: Knowledge Creation, Dissemination, and Preservation Studies 5 (1). <https://doi.org/10.18357/kula.13>
- Kornei, K. (2021), Academic citations evolve to include Indigenous oral teachings, Eos, 102, <https://doi.org/10.1029/2021EO210595>. Published on 9 November 2021.

#### Building Capacity and Providing Direct Funding to Tribes and Indigenous Organizations

- Kawerak, Inc. (2021) Knowledge & Research Sovereignty Workshop May 18-21, 2021 Workshop Report. Prepared by Sandhill.Culture.Craft and Kawerak Inc. Social Science Program. Nome, Alaska.
- In August 2022, the National Oceanic and Atmospheric Administration (NOAA) awarded a grant to the Alaska Native Tribal Health Consortium and jointly launched a pilot project to support Alaska Native communities’ resilience to climate change. This effort demonstrates how Agencies can include expertise from Tribes and Indigenous Peoples in developing effective approaches to address burdens on tribal communities. <https://www.noaa.gov/news-release/pilot-project-to-support-tribal-climate-resilience-in-alaska>

### *Appendix F: Additional Resources for Considering Indigenous Knowledge in Federal Research Design and Implementation Contexts*

Although a non-exhaustive list, the following resources may guide Federal researchers as they work to establish relationships with Tribes and Indigenous Peoples, acknowledging that each Tribe and research situation is unique. Many of these resources relate to *The Six Rs of Indigenous Research*, which are based on Indigenous Research Methodologies.<sup>113</sup>

#### Responsibility

It is the responsibility of the research team to understand the socio-political landscape of a research site and research question and to follow ethical best practices, whether or not the research is considered human subjects research.

- Wong et al., Towards Reconciliation: 10 Calls to Action to Natural Scientists Working in Canada, 5(1) FACETS 769–783 (2020), <https://doi.org/10.1139/facets-2020-0005>.
- Kūlana Noi‘i Working Group, Kūlana Noi‘i, 2 UNIV. OF HAW. SEA GRANT COLL. PROGRAM (2021), [https://seagrant.soest.hawaii.edu/wp-content/uploads/2021/09/Kulana-Noii-2.0\\_LowRes.pdf](https://seagrant.soest.hawaii.edu/wp-content/uploads/2021/09/Kulana-Noii-2.0_LowRes.pdf); Wong et al., *supra* note 104.
- Nicole S. Khun, Myra Parker, & Clarita Lefthand-Begay, Indigenous Research Ethics Requirements: An Examination of Six Tribal Institutional Review Board Applications and Processes in the United States, 15(4) J. OF EMPIRICAL RSCH. ON HUM. RSCH. ETHICS, 279 (2020).

#### Research Approach

Select appropriate research methods and parameters for the problem, the cultural context, and weaving together knowledge systems, as well as for the use of data and dissemination of results.

- Jennifer Sepez, Introduction to Traditional Environmental Knowledge in Federal Natural Resource Management Agencies, 27(1) PRACTICING ANTHROPOLOGY 2 (2005), <https://doi.org/10.17730/praa.27.1.01m318334845k392>.
- Kūlana Noi‘i Working Group, *supra* note 105.
- STACC Working Grp., Status of Tribes and Climate Change Report, INST. FOR TRIBAL ENV’T PROS., [D. Marks-Marino ed. 2021), <http://nau.edu/stacc2021>.
- Nicholas-Figueroa, Linda & Wall, Daniel & Muelken, Mary & Duffy, Lawrence, 2017. Implementing Indigenous Knowledge in Western Science Education Systems and Scientific Research on Alaska’s North Slope. *International Journal of Education*. 9(4):15. DOI:10.5296/ije.v9i4.12148.

#### Relevance

When working in or with Tribes and Indigenous communities, ensure research is relevant to the experiences, perspectives, priorities, and ways of knowing, and living in the community.

- U.S. Interagency Arctic Rsch. Pol’y Comm., Principles for Conducting Research in the Arctic, (2018),

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<sup>113</sup> Tsosie et al., *supra* note 59.



[https://www.iarpccollaborations.org/uploads/cms/documents/principles\\_for\\_conducting\\_research\\_in\\_the\\_arctic\\_final\\_2018.pdf](https://www.iarpccollaborations.org/uploads/cms/documents/principles_for_conducting_research_in_the_arctic_final_2018.pdf).

#### Representation

Empower Indigenous Peoples communities should lead in the research process by sharing to identify and share what is important to their people and contribute to the research process.

#### Community.

- Wong et al., supra note 104.

#### Respect

Have respect for Indigenous Peoples communities and cultures, multiple ways of knowing, and Indigenous knowledge holders.

- Interagency Arctic Resch. Policy Comm., Principles for Conducting Research in the Arctic (2018), [https://www.iarpccollaborations.org/uploads/cms/documents/principles\\_for\\_conducting\\_research\\_in\\_the\\_arctic\\_final\\_2018.pdf](https://www.iarpccollaborations.org/uploads/cms/documents/principles_for_conducting_research_in_the_arctic_final_2018.pdf) [hereinafter "IARPC"].
- Climate & Traditional Knowledges Workgroup, Guidelines of Considering Traditional Knowledges in Climate Change Initiatives (2014), <https://toolkit.climate.gov/tool/guidelines-considering-traditional-knowledges-climate-change-initiatives>.
- Wong et al., supra note 104.
- IARPC, supra note 113; Kūlana Noi'i Working Group, supra note 105.
- Saima May Sidik, Weaving Indigenous Knowledge into the Scientific Method Nature NATURE (Jan 11, 2022), <https://www.nature.com/articles/d41586-022-00029-2>; Kūlana Noi'i Working Group, supra note 105.

#### Relationship

Invest time and resources in engagement necessary to understand the issues, concerns, and needs from the perspective of partners. Acknowledge the relationality nature of relationships (people-to-people and people-to-environment) as they relate to Indigenous Knowledge. Honestly and clearly identify the purpose and motivation of the research.

- IARPC, supra note 113.
- Kristen A. Goodrich, et al., Who are Boundary Spanners and how can we Support Them in Making Knowledge More Actionable in Sustainability Fields?, 42 ENV'L SUSTAINABILITY 45 (2020), <https://doi.org/10.1016/j.cosust.2020.01.001>.

#### Knowledge sharing and data dissemination

Establish and follow clear guidelines and expectations of knowledge sharing and data dissemination that take into consideration Tribal and Indigenous Peoples' data and knowledge sovereignty, as well as Federal policies related to data releases, publications, and funding.

- Mark D. Wilkinson, et al. The FAIR Guiding Principles for Scientific Data Management and Stewardship, 3 SCI. DATA 160018 (2016), <https://doi.org/10.1038/sdata.2016.18>; Carroll et al., supra note 13.
- IARPC, supra note 113.
- Inuit Circumpolar Couns., supra note 3.
- Kūlana Noi'i Working Group, supra note 105.

#### Reciprocity

Establish practices that allow both Tribes and Indigenous Peoples and the scientific community to benefit from the research.

- ICC, 2022
- Kūlana Noi'i Working Group, supra note 105.



**DRAFT**Form 1221-2  
(June 2021)

UNITED STATES  
DEPARTMENT OF THE INTERIOR BUREAU OF LAND  
MANAGEMENT

**HANDBOOK TRANSMITTAL SHEET**

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Subject H-1794-1 - Mitigation Handbook (P)

**1. Updates, supersedes, or rescinds:**

Secretarial Order (SO) 3360 rescinded Handbook H-1794-1. SO 3398 revoked SO 3360. This Handbook is being reinstated with editorial and formatting updates; no substantive updates were made to this Handbook. Handbook H-1794-1 reiterates and expands upon the policy guidance in Manual Section MS-1794 for the Bureau of Land Management.

**2. Explanation of Materials Transmitted:**

Secretarial Order 3398 revoked SO 3360. IM 2019-018 issued on December 6, 2018 under SO 3360 was then rescinded by IM 2021-038 on July 12, 2021 because it was inconsistent with policy direction in SO 3398 and is superseded by reinstatement of this Handbook H-1794-1. This release of the Handbook supersedes the initial release (1-1783) of H-1794-1.

**3. Reports Required:**

None

**4. Delegations of Authority Updated:**

None

**5. Filing Instructions: File as directed below.****REMOVE**

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Resources and Planning

9/22/21

# Mitigation

.....  
Handbook H-1794-1



United States Department of the Interior  
Bureau of Land Management

AR\_0042597



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## CHAPTER 1. INTRODUCTION

The Bureau of Land Management (BLM) has a responsibility under the Federal Land Policy and Management Act (FLPMA) to manage the public lands for multiple use and sustained yield, except where otherwise provided by law. The effective use of mitigation allows the BLM to support a wide variety of resources and land uses across the landscape. Mitigation of the impacts from land uses ensures that the varied resources of the public's land continue to provide values, services, and functions. Mitigation is what sustains the public's land for present and future generations.

The BLM seeks to implement an approach to public land management that includes up-front identification of:

- low-conflict areas for development that avoid impacts;
- best management practices to minimize impacts during construction, operation, and reclamation;
- compensatory mitigation measures and sites to address residual effects that warrant additional mitigation; and
- areas that are too special to develop and deserve protection.

With this policy, it is our expectation that development can proceed in a more efficient manner while safeguarding the resources that the public has entrusted the BLM to manage.

### 1.1. Purpose

The broad purpose of this Mitigation Handbook is to elaborate on and provide additional clarity to the policy guidance identified in the BLM Mitigation Manual Section (MS-1794). Together, the Mitigation Manual Section and Handbook support the Bureau of Land Management's (BLM) multiple use and sustained yield mission by providing policies to:

- A. Implement consistent principles and procedures for mitigation in the BLM's authorization of public land uses.
- B. Consider mitigation well in advance of making decisions about anticipated public land uses by identifying opportunities for mitigation in mitigation strategies and incorporating mitigation into land use plans and programmatic or large geographic-scale NEPA analyses.
- C. Apply mitigation to address reasonably foreseeable impacts to resources (and their values, services, and/or functions)<sup>1</sup> from public land uses.

More specifically, this policy directs the BLM to take a consistent and deliberate approach when identifying, considering, and, as appropriate, requiring mitigation, to address impacts to resources from public land uses. One foundation of this policy's approach is that the BLM should consider mitigation in advance of making decisions about anticipated public land uses,

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<sup>1</sup> For brevity, in this policy, the term "resources (and their values, services, and/or functions)" is also referred to in this handbook simply as "resources."

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most prominently by developing mitigation strategies and identifying mitigation standards. Mitigation standards (identified in law, land use plans, and other decision documents) will guide the application of the mitigation hierarchy (Handbook Chapter 2.1.A and 2.2) for public land uses (e.g., how much mitigation and for which resources), and the mitigation strategies will provide recommendations/decisions for implementing the mitigation hierarchy (e.g., the what, where, and how for mitigation measures). Another foundation of this policy is that the BLM, when evaluating impacts to resources and considering appropriate mitigation for addressing those impacts, should do so in the context of the existing and anticipated conditions and trends of those resources, at all relevant scales, from the site-level to the landscape.

When considering appropriate mitigation, the BLM will also take into consideration any limitations on its decision-making authority. This handbook generally focuses on decisions where the BLM has broad discretion, including the discretion to deny public land authorizations. There are other instances where the agency's discretion is more limited (e.g., decisions made related to land uses conducted under the Mining Law or decisions related to existing leases and contracts). In such cases, the BLM will apply this policy, consistent with applicable law.

When reviewing proposed public land uses through the NEPA process, the BLM will ensure conformance with mitigation standards, incorporate appropriate aspects of applicable mitigation strategies, assess the impacts from proposed public land uses to the baseline conditions of resources, identify and consider appropriate and practicable avoidance and minimization measures, and identify and consider appropriate compensation for some or all residual effects (using the criteria established in this policy). The BLM will identify any required mitigation in the decision documents associated with the NEPA analysis and include any required mitigation in the land use authorization. Finally, the BLM should ensure that monitoring and adaptive management of mitigation measures is conducted in order to achieve durable mitigation outcomes.

## **1.2. Quick Reference Guide to the Handbook**

This Mitigation Handbook (H-1794-1) is a part of the Mitigation Manual Section (M-1794) and carries the same authority. Chapter 2 of this Mitigation Handbook reiterates and expands upon the policy identified in the Mitigation Manual. Chapters 3-6 of the Handbook provide additional detail on the policy identified in the Mitigation Manual.

The Mitigation Manual Section and Handbook relate to and should be used in conjunction with the program-specific manual sections, handbooks, and other policies, including forthcoming, program-specific, step-down policies on mitigation.

The Mitigation Manual Section and Handbook also relate to and should be used in conjunction with the Land Use Planning Handbook (H-1601-1) and the National Environmental Policy Act (NEPA) Handbook (H-1790-1), among other policies.



## CHAPTER 2. MITIGATION PRINCIPLES AND PROCEDURES

### 2.1. Principles for Mitigation in the BLM

When evaluating the mitigation of impacts to resources (and their values, services, and/or functions), consistent with applicable law, the BLM will consider the full mitigation hierarchy, described below, and implement mitigation, as appropriate, at all relevant scales, while incorporating best management practices. Effective mitigation is durable, defined by outcomes, implemented and monitored for effectiveness, considered within an adaptive management framework, reported upon, managed by a responsible party, guided by the best available science, and developed through effective, early, and frequent communication with the public land user, cooperating agencies, and other stakeholders, including the public.

#### A. Mitigation

The BLM will identify, consider, and, as appropriate, require mitigation to address reasonably foreseeable impacts to resources from public land uses (BLM-proposed and externally proposed (i.e., proposed by a party outside of the BLM)).

1. The Council on Environmental Quality (CEQ) has defined mitigation in its regulations at 40 CFR 1508.1 to include:

- avoiding the impacts by not taking a certain action or parts of an action,
- minimizing impacts by limiting the degree or magnitude of the action and its implementation,
- rectifying the impact by repairing, rehabilitating, or restoring the affected environment,
- reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and
- compensating for the impact by replacing or providing substitute resources or environments (see Handbook Chapter 3).

Collectively, the five aspects of mitigation (avoid, minimize, rectify, reduce/eliminate, compensate) are referred to as the mitigation hierarchy because they are generally applied in a hierarchical manner (Handbook Chapter 2.2). All five aspects of mitigation can, as a practical matter, be summarized as avoidance, minimization, and compensation. In this handbook, when referring to mitigation, the full five-prong mitigation hierarchy is implied.

2. Mitigation addresses the adverse direct and indirect impacts to the baseline conditions of resources (including consideration of the quantity, quality, and characteristics of those resources) from public land uses. The assessment of cumulative impacts provides a broader context for understanding the direct and indirect impacts. When assessing impacts of authorizing a public land use, the BLM should use, as appropriate, consistent and transparent methods and consider the full life-cycle of a public land use. Whenever possible, the same or compatible methods, including

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metrics, as used to identify resource objectives (e.g., in a land use plan) should be used to measure the reasonably foreseeable impacts (as compared to baseline conditions) of a proposed public land use, and should be used to design and monitor mitigation measures.

3. The BLM identifies and considers mitigation to address impacts to resources in NEPA analyses for proposed public land uses, and, as appropriate, requires mitigation to address impacts to resources in the associated decision documents and land use authorizations (Handbook Chapter 6 and Handbook Chapter 7). The BLM will identify, consider, and, as appropriate, require mitigation, to address reasonably foreseeable impacts, whether or not the impacts are “significant” (as defined by 40 CFR 1508.1). The BLM has authority to require appropriate mitigation under a variety of authorities, including FLPMA (Manual Section 1.3).
4. The BLM will, through the land use planning process, for resources that are considered important, scarce, sensitive, or have a protective legal mandate, identify mitigation standards. As appropriate and through application of the mitigation hierarchy, mitigation standards should seek to achieve a no net loss or net benefit outcome for such resources. In some cases, mitigation standards are identified in law and therefore should be incorporated into land use plans, as appropriate. When identified in a land use plan, the BLM will adhere to these or more protective mitigation standards for any applicable public land use, consistent with the law(s) under which BLM authorizes the land use (Handbook Chapter 5.1.A).

If a mitigation standard has not yet been identified in a land use plan, the BLM may identify mitigation standards for resources that are considered important, scarce, sensitive, or have a protective legal mandate, as appropriate, in other decision documents supported by appropriate NEPA analysis.

The BLM may also identify mitigation standards for resources that are considered important, scarce, sensitive, or have a protective legal mandate in mitigation strategies (Handbook Chapter 4.4), if mitigation standards have not already been identified by the BLM for those resources. If the mitigation strategy is not incorporated in a decision document, supported by adequate NEPA analysis, then the BLM should consider the findings and recommendations that are contained in the mitigation strategy through future decision-making processes.

5. The need for, type of, and amount of avoidance, minimization, rectification, and reduction or elimination over time should be based on applicable mitigation standards, what is appropriate and practicable, and should also include other considerations, such as the resource’s importance, scarcity, or sensitivity, at all relevant scales, and whether the resource for which adverse impacts will be mitigated has legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts (Handbook Chapter 3).



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Existing legal authorities contain additional protections for some resources that are of such irreplaceable character that minimization and compensatory mitigation measures may not be adequate or appropriate, and therefore avoidance is the only appropriate form of mitigation, consistent with applicable law. The BLM will seek to avoid, to the greatest extent practicable, reasonably foreseeable impacts to the National Park System, National Wildlife Refuge System, National Landscape Conservation System (National Conservation Lands), Areas of Critical Environmental Concern, and other special status areas (Handbook Chapter 3.1.D).

6. The need for compensatory mitigation should be based on applicable mitigation standards, and what is appropriate for each individual proposed public land use, taking into consideration applicable law, policies, land use plans, and mitigation strategies (Handbook Chapter 3.5.B). In general, the BLM should seek to identify compensatory mitigation measures that will appropriately mitigate the reasonably foreseeable residual effects that warrant compensatory mitigation, after first considering and applying, as appropriate, the first four mitigation approaches in the five-prong mitigation hierarchy, and achieve the maximum benefit to the impacted resources within the context of the conditions and trends of those resources, at all relevant scales. All compensatory mitigation obligations should be commensurate with the impacts from the public land uses (Handbook Chapter 3.5.F.1). Additionally, the BLM's general preference is to achieve compensatory mitigation outcomes in advance of public land uses' impacts (Handbook Chapter 3.5.F.2).

## **B. Landscape-Scale Approach**

Mitigation should be considered and implemented on a landscape-scale. A landscape-scale approach considers baseline conditions, reasonably foreseeable impacts, including impacts that extend beyond the BLM's administrative boundaries, and the application of the mitigation hierarchy in the context of the conditions and trends of resources, at all relevant scales, consistent with applicable law.

1. A landscape-scale approach facilitates the mitigation of impacts to resources within the relevant geographic area of those resources, however narrow or broad.
2. Application of the mitigation hierarchy at a landscape-scale may involve multiple stakeholders and tradeoffs among a broad range of resources.
3. The BLM should consider the management responsibilities and interests of other Federal agencies, Tribal, State, and/or local governments with the relevant landscape.
4. A landscape-scale approach paired with the mitigation hierarchy process allows for the identification of the most appropriate combination of mitigation measures across all relevant scales to provide the maximum benefit to the impacted resources. For example, in cooperation with other land managers, this could include development of common reclamation and restoration standards, or landscape-wide surface disturbance

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limitations to reduce impacts to wide-ranging species and their migratory routes and seasonal habitat.

5. A landscape-scale approach also allows for identification of the most effective compensatory mitigation sites without implying a preference for siting compensatory mitigation closer to or farther away from the impacted site or implying a preference for Federally managed lands. The lack of preference for Federally managed lands in siting compensatory mitigation is due, in some instances, to the BLM's interest in benefiting specific impacted public land resources.

The maximum benefit to the impacted resource might be achieved at a compensatory mitigation site either geographically close or geographically far from the impacted site, so long as the mitigation at that site has a reasonable relationship to benefiting the public land resources where the resource impact is expected to occur or is occurring. The site that provides the maximum benefit to the public land resources does not need to be near the site where the resource impact occurred. Compensatory mitigation measures sited on non-BLM-managed lands, which may include lands managed by other land management agencies, will require the consent of the landowner or manager.

For example, this could include identifying a compensatory mitigation site near the impacted site for a locally important species, such as a scarce and locally endemic plant, that may decline due to the impact of the public land use. Or it may include identifying a compensatory mitigation site far from the site of the public land use and potentially on non-public lands (with a willing landowner), where the species may have a more pressing ecological need (such as scarce breeding grounds), as long as a reasonable relationship is maintained between the impacts of the public land use and the compensatory mitigation measure(s) implemented at that site.

6. Compensatory mitigation may be appropriate even if the compensatory mitigation measures are sited outside the boundaries of the lease, grant, mining plan of operations, etc., as long as a reasonable relationship is maintained between the impacts of the public land use and the compensatory mitigation measure(s) being implemented at that site. The use of compensatory mitigation does not mean that BLM may approve public land uses that cause unnecessary or undue degradation to the public lands (see Handbook Chapter 2.5.C).
7. The BLM may also develop landscape-scale mitigation strategies (Handbook Chapter 4), in addition to implementing the landscape approach in land use plans (Handbook Chapter 5) and when authorizing public land uses (Handbook Chapter 6 and Handbook Chapter 7).

### **C. Best Management Practices**

As applicable to mitigation, best management practices (BMPs) are state-of-the-art, efficient, appropriate, and practicable mitigation measures for avoiding, minimizing,



rectifying, and reducing or eliminating impacts over time. The BLM should identify, consider, and, as appropriate, require the use of BMPs to address reasonably foreseeable impacts to resources, rather than routinely relying on past practices. Depending on the public land use, BLM may seek an applicant's voluntary commitment to follow BMPs or require BMPs as a condition of authorization if allowed under existing legal authority.

#### **D. Durability**

The BLM should identify, consider, and, as appropriate, require mitigation that is durable, i.e., it will be effective for the duration of the impacts resulting from the associated public land use.

1. Durability includes three types of considerations for mitigation measures and for compensatory mitigation sites: resource, administrative, and financial.
  - a. Resource considerations for durability include, but are not limited to, ensuring that mitigation measures and/or compensatory mitigation sites achieve and maintain their required outcomes, including being resilient to changing circumstances (e.g., climate change, fire, invasive species), for the duration of the impacts.
 

*Example: If a mitigation obligation includes minimizing the contrast of an oil and gas production facility with the surrounding landscape by painting the facilities shale green, then the BLM should ensure through compliance inspections that the paint color is maintained and does not deteriorate due to staining or fading during the life of the facility.*
  - b. Administrative considerations for durability include, but are not limited to, restricting incompatible uses on mitigation sites (e.g., through the use of a conservation easement on private land), or permitting land uses that are supportive of the mitigation sites (e.g., additional restoration projects), through permit terms and conditions, land use planning, or legal designations.
  - c. Financial considerations for durability include, but are not limited to, ensuring there will be financing sufficient to maintain, monitor, and adaptively manage mitigation measures and/or compensatory mitigation sites for the duration of the impacts from the public land use (Handbook Chapter 7.2).
2. The duration of the impact is the time that resource impacts (including direct and indirect effects) from a public land use persist, even if this time period extends beyond the expiration of the public land use. The duration of *some* impacts may be in perpetuity, such as the construction of a new transmission line or a county road. The BLM should use the best available science to estimate the duration of the impact. For compensatory mitigation measures and sites, the BLM should consider the duration of the residual effects to be at least until the residual effects have been restored.

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*Example: An oil and gas development plan will result in the loss of 275 acres of important wildlife habitat, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that the restoration of 275 acres of wildlife habitat would be required as compensatory mitigation. These residual effects are expected to last 50 years before the public land user achieves full restoration of the affected habitat, and therefore, the benefits of the restoration of the habitat should also be in place and effective for at least 50 years.*

3. As appropriate, the BLM should ensure that the responsible party is obligated to maintain the mitigation's durability and correct any loss of durability (i.e., a reversal), unless the outcome is not achieved due to a force majeure event. If the loss of durability is not corrected, the BLM will take appropriate follow-up actions, including enforcement actions, consistent with applicable law and as provided for in applicable regulations (see Handbook Chapter 7.3).
4. Details about tools to achieve (degrees of) durability for compensatory mitigation sites on BLM-managed lands and private lands are described in Appendix 1.

#### **E. Mitigation Measures' Outcomes and Performance Standards**

When developing mitigation measures, the BLM should establish clearly defined and measurable outcomes for those measures through regulation, land use planning, or in another decision document, as appropriate, although it may also be necessary to establish minimum actions (i.e., outputs) that the responsible party must take to achieve those outcomes. The BLM should also develop performance standards through regulations, land use planning, or in another decision document, as appropriate, as part of the mitigation requirements that the BLM will use to monitor and assess the effectiveness of compensatory mitigation measures.

1. Mitigation measures should be defined by outcomes and may also include specific outputs.

*Example (minimization): A new road will result in substantial soil erosion. Through the NEPA analysis and in the decision document, the BLM determines that the minimization of soil erosion would be required. The outcome of a minimization measure for addressing soil erosion might be that erosion features are equal to or less than those on surrounding undisturbed areas and erosion control is sufficient so that water naturally infiltrates into the soil and no gully, headcutting, slumping, and deep or excessive rills (greater than 3 inches) occur (an outcome). This may be supplemented by the requirement that the permit holder roughen the surface and apply mulch to the impacted site (an output that the local BLM office recognizes as a minimum action necessary for achieving the required outcome).*



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*Example (compensatory mitigation): A new road will result in the loss of a scarce desert riparian area, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that the restoration of a nearby degraded desert riparian area would be required as compensatory mitigation because restoring the offsite degraded riparian area would address the loss of desert riparian area from the new road. The outcome of the compensatory mitigation would be to restore the degraded desert riparian area to the applicable ecological site potential (an outcome). This may be in addition to identifying the seeding or planting of specific desert riparian plants (an output).*

- a. Mitigation measures' outcomes should support the applicable land use plan's resource objectives, and/or the objectives of other Federal agencies, Tribal, State and/or local governments, consistent with applicable law.
  - b. In general, the BLM should anticipate the need to adapt the mitigation measures to meet the required mitigation outcomes by analyzing different adaptive scenarios in the NEPA analysis for those mitigation measures. For externally proposed public land uses, the BLM should ensure that adaptive, outcome-based mitigation is adequately described in the land use authorization (Handbook Chapter 7).
2. The BLM should use performance standards to monitor and assess the effectiveness of the mitigation measure in achieving the required outcome. The BLM should use the same or compatible methods, including metrics, that it used to identify resource objectives (e.g., in a land use plan) and/or that it used to measure the reasonably foreseeable impacts (as compared to baseline conditions) of a proposed public land use (Handbook Chapter 2.1.A.2), when designing these performance standards to be able to best measure the effectiveness of the mitigation measures for those impacts.

*Example: If the compensatory mitigation measure is for the responsible party to restore 24 acres of functioning nesting habitat, then the compensatory mitigation measure's performance standard should be defined by the specific ecological attributes that will indicate that the nesting habitat in those 24 acres is restored and functioning. The performance standard should also include a specific timeframe for achieving the functioning habitat.*

#### **F. Implementation (Compliance) and Effectiveness Monitoring**

The BLM should ensure that mitigation measures are implemented (i.e., complied with) and monitored for effectiveness, as provided for in land use authorizations, and consistent with applicable law and regulation.<sup>2</sup>

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<sup>2</sup> For additional guidance on monitoring and mitigation, please refer to: Executive Office of the President, Council on Environmental Quality's *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact* January 14, 2011.

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For some land uses, applicable regulations provide that the BLM may require the public land user to monitor the effectiveness of its compliance with applicable mitigation measures. For example, the BLM's regulations require operators who file a mining plan of operations under 43 CFR 3809 to include a proposed plan for monitoring the effect of their mining operations. The applicable regulation, 43 CFR 3809.401(b)(4), requires operators to design monitoring plans to demonstrate compliance with the plan of operations (which would include any mitigation measures required under the plan), provide early detection of potential problems, and supply information to assist in directing corrective action, if necessary.

In other instances, the BLM may have the discretion to require a public land user to monitor the effectiveness of mitigation measures without express regulatory provisions. Under other circumstances, the BLM may have to conduct the monitoring (e.g., an existing lease where neither applicable regulations nor the terms of the lease provide for monitoring). If the BLM has questions about how to provide for monitoring, it should consult with the Office of the Solicitor.

The BLM will take appropriate follow-up actions, including enforcement actions, consistent with applicable law and as provided for in applicable regulations, as necessary, if the mitigation measures are not implemented as designed or if the mitigation measures are not effective in achieving the required mitigation outcomes, based on effectiveness monitoring (see Handbook Chapter 7.3), unless the outcome is not achieved due to a force majeure event.

1. **Implementation (Compliance).** The BLM should conduct regular compliance inspections for the duration of the land use authorization to verify that mitigation measures are being implemented as required in the land use authorization.
2. **Effectiveness Monitoring.** Consistent with applicable law, the BLM should verify that the public land user is achieving the required outcomes and/or implementing the appropriate adaptive management measures.
  - a. Consistent with applicable law, the BLM should apply the rule of reason when identifying the type, extent, and duration of effectiveness monitoring for mitigation measures, as guided by the degree of uncertainty associated with a mitigation measure, the amount and type of the mitigation measure, and the potential need for adaptive management.
    - i. While effectiveness monitoring may cease when a mitigation measure's outcome has been achieved, in some cases, effectiveness monitoring may be necessary for the duration of the impacts from the public land use.
    - ii. In some cases, especially where reasonably foreseeable impacts have landscape-scale implications, effectiveness monitoring may be necessary at



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fine-, mid-, and broad-scales in order to ensure that a mitigation measure's outcome is being achieved.

- b. As mentioned in the first paragraph of this section, the BLM should ensure that mitigation measures are implemented and monitored for effectiveness, as provided for in land use authorizations, and consistent with applicable law and regulation. Where a responsible party uses a third-party compensatory mitigation mechanism to fulfill a compensatory mitigation requirement, it is acceptable for the responsible party to transfer monitoring responsibilities to the third party. (Handbook Chapter 3.5.I).

When making decisions regarding applications for land uses for which BLM has limited discretion, if there are no applicable regulations or applicable terms and conditions in an existing land use authorization that require mitigation effectiveness monitoring, the BLM will conduct the effectiveness monitoring to assess whether the public land user is complying with the mitigation measures that BLM has required, unless the BLM develops a written agreement with another entity to conduct the effectiveness monitoring.

- c. Whenever appropriate, effectiveness monitoring should be designed around the same or compatible methods, including metrics, that it used to identify resource objectives (e.g., in a land use plan), measure the reasonably foreseeable impacts (as compared to baseline conditions) of a proposed public land use (Handbook Chapter 2.1.A.2), and/or define the mitigation measure's outcome and performance standards (Handbook Chapter 2.1.E).
- d. Whenever appropriate, the BLM should incorporate effectiveness monitoring into existing monitoring programs and sampling grids managed by the BLM or other entities to increase the utility and rigor of these data. Similarly, whenever appropriate, effectiveness monitoring should comply with BLM-adopted, standardized, monitoring protocols (e.g., *BLM Core Terrestrial Indicators and Methods (Technical Note 440)*<sup>3</sup>). In this case, these monitoring data should be incorporated into the appropriate databases, etc.

## G. Adaptive Management<sup>4</sup>

- 1. The BLM should use the best available science, implemented mitigation measures, and associated effectiveness monitoring to implement, or require the responsible party to implement, consistent with applicable law, adaptive management of mitigation measures to reduce uncertainty and achieve the required mitigation outcomes. The BLM should also use these lessons learned to guide and improve the development and implementation of future mitigation measures.

<sup>3</sup> <https://aim.landscapetoolbox.org/wp-content/uploads/2015/09/TN440-BLM-Core-Terrestrial-Indicators-and-Methods.pdf>

<sup>4</sup> For additional guidance on adaptive management, please refer to DOI's adaptive management technical and applications guide (TechGuide-WebOptimized-2.pdf (doi.gov)).

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2. Additionally, in a land use plan or land use authorization, the BLM may implement an adaptive management framework where specific thresholds for the level of acceptable impacts are identified, as well as specific mitigation measures that will be implemented if the level of acceptable impacts is exceeded.

**H. Reporting**

1. Depending on the amount and type of the mitigation measures, the BLM in a land use authorization should require the responsible party to prepare and submit periodic reports to the appropriate BLM office on the implementation and effectiveness of the mitigation measures, consistent with applicable law, including the Paperwork Reduction Act.
2. The BLM is responsible for reviewing monitoring reports to ensure that the public land user is complying with the terms and conditions of the associated land use authorization. The BLM will use these reports to help determine if the responsible party needs to complete any necessary corrective actions in order to achieve the required mitigation outcomes.
3. As appropriate, monitoring reports may consist of written summaries, geospatial data layers (with metadata) of the mitigation measures, digital photos (with appropriate geospatial information), and implementation and effectiveness monitoring data in order to verify that mitigation measures are being implemented as required in the land use authorization and that the required outcomes are being achieved.
4. The BLM will make aspects of the monitoring reports available to the public, while redacting or withholding sensitive or confidential information, consistent with applicable laws and policies.
5. The applicable BLM's authorized officer should submit any compensatory mitigation monitoring reports, after review by the applicable BLM office, to the BLM National Operations Center, which will verify the reports meet the appropriate data standard and store them in a centralized, searchable repository.

**I. Responsible Parties**

1. When mitigation obligations are included in a land use authorization, the BLM will identify a responsible party in the land use authorization that is accountable for fulfilling all aspects of mitigation obligations, including but not limited to, ensuring the durability and effectiveness of mitigation measures, achieving mitigation measures' outcomes, and complying with monitoring, adaptive management, and reporting requirements.
2. If mitigation measures are ineffective, as determined by effectiveness monitoring, the BLM will work with the responsible party to identify appropriate actions for achieving



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the required mitigation outcomes and for complying with the terms and conditions of applicable land use authorizations. The BLM will take appropriate follow-up actions, including enforcement actions, consistent with applicable law and as provided for in applicable regulations, as necessary, if the mitigation measures were not implemented as designed or if the mitigation measures have not been effective in achieving the required mitigation outcomes, based on effectiveness monitoring (see Handbook Chapter 7.3), unless the outcome is not achieved due to a force majeure event.

**J. Best Available Science**

1. The BLM will use the best available science<sup>5</sup> (e.g., peer reviewed research and methods, monitoring data and modeling results, well-documented case studies, etc.), including the principles and practices identified in *Advancing Science in the BLM: An Implementation Strategy*<sup>6</sup>, to inform the identification and analysis of reasonably foreseeable impacts and mitigation for those impacts and achieve effective mitigation outcomes.
2. For compensatory mitigation obligations, it may be appropriate to include scientific studies or inventories that can aid in determining the appropriate type, duration, and amount of compensation. Generally, scientific studies or inventories, on their own, should not be considered compensation as they do not replace or provide substitute resources or environments.

**K. Communication**

1. The BLM should employ effective, early, and frequent communication about the identification, analysis, and implementation of mitigation with the public land user, cooperating agencies, and other stakeholders, including the public. This communication includes extending opportunities to participate in the development of mitigation strategies and land use plans, and to provide input on the analysis for proposed public land uses.
2. Effective communication regarding the identification and analysis of mitigation measures is essential to proactively address disagreements and generate broad support for mitigation.
3. Coordination with other Federal agencies, Tribal, State and/or local governments can help to ensure that mitigation is efficient, effective, durable, additional, non-duplicative, and mitigates impacts that extend beyond the BLM's administrative boundaries.

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<sup>5</sup> The phrases “best available science” or “best available data” are often referred to as BLM policy for the information contained in agency documents (BLM Information Quality Act Guidelines, Undated April 2, 2018). BLM policy that data comprise high quality information is consistent with Office of Management and Budget guidance for Federal agencies in implementing Information Quality Act requirements that data be of high objectivity, integrity, and utility for agency decision-making.

<sup>6</sup> <https://www.blm.gov/documents/national-office/public-room/strategic-plan/advancing-science-blm-implementation-strategy>

## **2.2. Implementing the Mitigation Hierarchy**

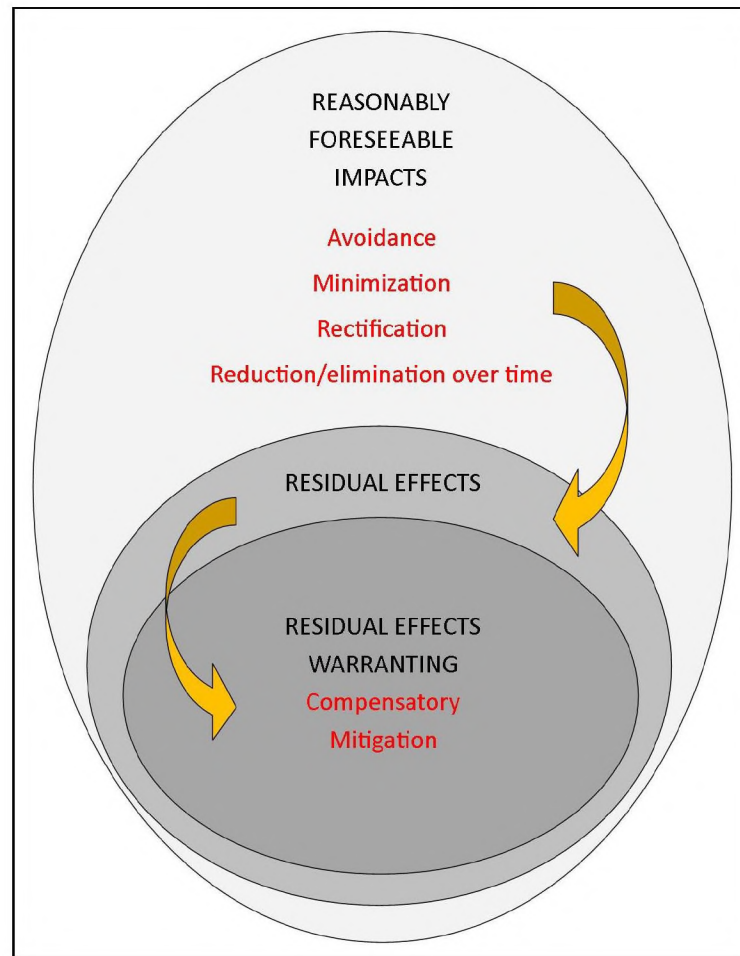
The BLM will implement the mitigation hierarchy when identifying, considering, and, as appropriate, requiring mitigation, to address reasonably foreseeable impacts to resources (see Figure 1.1). The BLM's aim is to apply the mitigation hierarchy in the manner that achieves the maximum benefit to the impacted resource, consistent with applicable law. First, the BLM will seek to require the public land user to avoid impacts, consistent with applicable law (e.g., by altering project design, location, or timing); then the BLM will seek to require the public land user to minimize impacts (e.g., through project modifications, permit conditions, interim and final reclamation, etc.); and, generally, only if those approaches are insufficient to fully mitigate the impacts from a proposed public land use, will the BLM seek to require the public land user to compensate for some or all of the remaining impacts from the proposed public land use (i.e., residual effects), based on the criteria identified in Handbook Chapter 3.5.B. In limited situations, specific circumstances may exist that warrant deviating from this sequence, such as when seeking to achieve the maximum benefit to impacted resources or when constrained by the terms and conditions of existing land use authorizations or applicable law. In limited instances, the BLM might determine that the impacts (including residual effects) of public land uses may be acceptable and will not require mitigation, based on the criteria identified in Handbook Chapter 3.

In many cases, the five aspects of the mitigation hierarchy will overlap. For example, consistent with lease terms and conditions, interim reclamation of a producing oil and gas well may be considered a form of either minimizing or reducing/eliminating impacts over time. Final reclamation, on the other hand, is a form of rectification, but could be considered compensation when an operator performs final reclamation and restoration of orphaned oil and gas well locations and access roads (i.e., locations that no longer have a responsible party) in order to obtain permits for additional new wells and roads in an area that has a surface disturbance limitation/cap in the land use plan, consistent with lease terms and conditions.



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**Figure 1.1.** Implementing the Mitigation Hierarchy.

### 2.3. Advance Consideration of Mitigation: Mitigation Strategies

Mitigation strategies identify, consider, and communicate potential mitigation needs and mitigation measures in a geographic area, at relevant scales, well in advance of anticipated public land uses (BLM-proposed and externally proposed). The BLM should prepare mitigation strategies where the condition of resources (including their values, services, and/or functions) is declining or has a reasonable potential to decline and new impacts to those resources are reasonably foreseeable, or where resources would otherwise benefit from advance consideration of landscape-scale mitigation. Effective mitigation strategies are created and maintained by fully engaging stakeholders in the process. Mitigation strategies will help to increase the effectiveness, consistency, and transparency of mitigation by shifting away from a reactive and permit-by-permit approach to a more efficient, proactive model that identifies mitigation standards (if they do not already exist) and pre-identifies and pre-considers mitigation measures. Mitigation strategies will assist the BLM to better anticipate reasonably foreseeable impacts, strategically apply the mitigation hierarchy, and generate better outcomes for impacted resources. Mitigation strategies may be developed within a NEPA analysis or developed independently to inform future NEPA analysis and/or decision-making.

## **2.4. Advance Consideration of Mitigation: Land Use Planning (interim)**

*[This section on mitigation in land use planning is interim policy and will be superseded by relevant updates to the BLM's land use planning handbook.]*

The land use planning process provides one method for identifying, considering, and, as appropriate, requiring mitigation well in advance of anticipated public land uses. Additionally, the land use planning process provides an opportunity to incorporate relevant components of a mitigation strategy into a land use plan (Handbook Chapter 4). The land use plan can identify resource objectives and associated mitigation standards, land use allocations, and management actions to facilitate the application of appropriate mitigation for public land uses. Also, to support the implementation of durable compensatory mitigation measures on BLM-managed lands, the BLM can support or identify compensatory mitigation sites with land use allocations that limit or exclude incompatible uses of those sites, consistent with applicable law.

During the land use planning process, consistent with applicable law, the BLM will consider and, as appropriate, include in the land use plan:

- A.** Scientifically informed and measurable land use plan objectives for resources, which include mitigation standards for resources that are considered important, scarce, sensitive, or have a protective legal mandate (e.g., no net loss, net benefit).
- B.** Land use allocations that limit or exclude certain uses (e.g., right-of-way exclusion areas, closures or constraints to fluid mineral leasing) or concentrate certain uses in defined areas (e.g., solar energy zones) or corridors (e.g., right-of-way corridors) in order to avoid and minimize impacts to resources from public land uses. The land use planning process may not be used as a substitute for a withdrawal to close lands to the operation of the Mining Law.
- C.** Management actions (e.g., best management practices) that help to support the land use plan's resource objectives, including applicable mitigation standards.
- D.** Land use allocations that support or identify compensatory mitigation sites on BLM-managed lands and limit or exclude incompatible uses of those sites. Compensatory mitigation sites may be located within formal designations, such as Areas of Critical Environmental Concern (ACEC) or units of the National Conservation Lands, or may be located within general geographic areas without a formal designation where incompatible uses are excluded or restricted.

## **2.5. Mitigation of Public Land Uses**

The BLM will identify, consider, and, as appropriate, require mitigation to address reasonably foreseeable impacts to resources through NEPA analyses and within associated decision documents and land use authorizations. The BLM should ensure that mitigation measures have clearly defined and measurable outcomes and are implemented and monitored for effectiveness.



**A. NEPA for Public Land Uses**

Through the NEPA analysis process, the BLM will, to the greatest extent possible, identify and consider the effectiveness of mitigation to address reasonably foreseeable impacts (both significant and non-significant) to resources (and their values, services, and/or functions) from proposed public land uses (BLM-proposed and externally proposed). The BLM will identify any required mitigation in the decision document(s) associated with the NEPA analysis and include any required mitigation in the land use authorization(s).

Mitigation should not be an afterthought; mitigation should be considered early and throughout the NEPA analysis process (e.g., scoping, proposed action, alternatives, environmental effects). For example, for BLM-proposed public land uses, the BLM should incorporate appropriate mitigation into the proposed project's design as an integral component of the proposed action (i.e., project design features). Or, for externally proposed public land uses, the BLM should encourage applicants to propose appropriate mitigation for their public land use. Where they exist and are relevant, mitigation strategies will be used to inform the NEPA analyses for applicable proposed public land uses.

**B. Denying Proposed Public Land Uses**

Consistent with applicable law, the BLM generally has broad discretion to grant, grant with modifications, or deny a proposed public land use. Even where the agency has determined that a project proponent has a legal right to conduct the public land use, the BLM often has a degree of discretion on where and how public land uses may occur. Among the reasons that the BLM might deny a discretionary public land use are the inability to mitigate effectively the reasonably foreseeable impacts from a proposed public land use, an applicant's refusal to accept appropriate mitigation requirements, or if the action would violate a law, violate a regulation, violate a policy, or would not conform to a land use plan. Consistent with applicable law, the BLM may decline to authorize discretionary public land uses, including when the impacted resources are too important, scarce, or sensitive to withstand impacts or have legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts, even after the implementation of mitigation. Consistent with applicable law, the BLM may also use its discretion to deny public land uses if impacts are expected to extend beyond the BLM's administrative boundaries and negatively affect the management responsibilities of other entities (e.g., units of the National Park System, State Parks) or impact resources managed by those entities that are too important, scarce, or sensitive to withstand those impacts or have legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts.

**C. Unnecessary or Undue Degradation**

The BLM cannot authorize a public land use that would result in unnecessary or undue degradation to the public lands (FLPMA § 302(b), 43 USC § 1732(b)). Proposed public

land uses that are expected to cause unnecessary or undue degradation will either be denied or modified (via avoidance, minimization, rectification, and reduction/elimination over time) such that the reasonably foreseeable impacts will not cause unnecessary or undue degradation. In limited circumstances, compensatory mitigation can mitigate for impacts that would—in the absence of such compensatory mitigation—constitute unnecessary or undue degradation.

## **2.6. Policy Limitations**

Limitations on the use of this policy include the following:

### **A. Previously Approved Land Use Authorizations**

For land use authorizations approved by the BLM prior to the issuance of this policy, this policy applies only to the extent consistent with the land use authorization (Handbook Chapter 2.6.C). If a land use authorization is being renewed or amended, refer to Handbook Chapter 2.6.B.

### **B. Renewal or Amendment of Land Use Authorizations**

The BLM may require additional mitigation measures, as appropriate and consistent with applicable law, during the renewal or amendment process for land use authorizations that the BLM approved prior to the issuance of this policy to address reasonably foreseeable impacts that have developed since the BLM authorized the public land use or that would cease but for the renewal or amendment of that authorization. Mitigation may not be required to address impacts from the original land use authorization that are no longer present or were adequately mitigated at the time the original land use authorization was approved.

*Example: A 30-year road right-of-way grant is about to expire. The original construction of the road and its ongoing use under the grant has lessened the value of mule deer winter habitat that existed prior to the road's construction and operation. The area near the road is no longer functional mule deer wildlife habitat. The BLM approves the right-of-way renewal for an additional 30 years and requires additional mitigation measures to reduce ongoing mule deer winter roadkill associated with the road and identified at the time of the right-of-way renewal. The BLM further requires compensatory mitigation for the ongoing loss of mule deer habitat, which would have been reclaimed and restored within 10 years, but for the renewal of the right-of-way.*

*Example: A right-of-way is up for renewal for a high-voltage transmission line that crosses important habitat for a sensitive ground-dwelling bird and has led to increased predation and mortality. But for renewal of the right-of-way authorization, the line would be decommissioned and the predation pressure would cease. The BLM renews the right-of-way*



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*authorization contingent on a package of minimization and compensation measures that decrease available perches and protect important habitat elsewhere. The BLM does not apply mitigation for the noise and dust disturbance associated with the original construction of the line.*

### **C. Valid Existing Rights and Limited Discretion Decisions**

This policy applies to a different extent where the BLM's discretion to deny or regulate a proposed public land use is more limited, such as with mining plans of operations, existing leases, existing contracts, or statutorily mandated actions like legislated land exchanges or sales. Nonetheless, the application of mitigation may be appropriate. In these instances, the BLM will still identify and consider the effectiveness of appropriate mitigation measures in its NEPA analyses, including compensatory mitigation; however, any mitigation requirements in the decision should be consistent with the regulations governing mining plans of operations, the terms and conditions of existing leases and existing contracts, or the applicable legislation. For example, if an oil and gas lease has issued with standard lease terms and conditions, the BLM should ensure that any additional and appropriate mitigation measures required for a permit to drill are reasonable and consistent with those lease terms and conditions.

*Example: An applicant submits a mining plan of operations under 43 CFR Subpart 3809. The BLM may not approve the proposed plan of operations if the impacts identified in the NEPA process constitute unnecessary or undue degradation; consequently, the agency may require application of the full mitigation hierarchy to ensure that the proposed operations will not cause unnecessary or undue degradation. If the impacts identified in the NEPA process do not constitute unnecessary or undue degradation, the BLM should still apply the full mitigation hierarchy to identify appropriate mitigation, including compensatory mitigation; however, BLM's ability to require the operator to perform mitigation in these circumstances is more limited. If there are any questions regarding the appropriateness of mitigation measures, consult the Mining Law Administration Program Lead in the relevant State Office.*

*Example: An applicant submits a field-wide oil and gas development plan covering valid oil and gas leases that would result in impacts to important resources, as identified through NEPA analysis. The BLM may require application of the full mitigation hierarchy, including compensatory mitigation (at a compensatory mitigation site off of the lease through a separate land use authorization) to address the impacts, so long as that requirement is consistent with the terms and conditions of the lease.*

### **D. Land Use Authorizations on Split Estate Lands**

This policy applies to land use authorizations where the subsurface estate is owned by the United States, but the surface is owned by a different entity or person (i.e., split estate

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lands). The BLM generally has the authority to regulate the public land uses that involve federally owned mineral estate by requiring mitigation measures to address reasonably foreseeable impacts, including impacts to the surface estate. The BLM must consider the views of the surface owner(s) prior to its decision, consistent with applicable laws and policies.

If siting compensatory mitigation on split estate lands, the BLM will ensure that the willing landowner consents and that the site will receive adequate administration, durability, monitoring, reporting, funding, and that BLM is provided reasonable access to the compensatory mitigation site(s) for oversight purposes for the duration of the impacts from the public land use.

**E. Operations Authorized by the Mining Law of 1872**

The BLM should apply this mitigation policy on a case-by-case basis, consistent with the BLM's authority under the Mining Law, when authorizing operations under 43 CFR subparts 3809 or 3715. The BLM will follow the policy in this handbook if the mitigation is necessary to comply with the performance standards in 43 CFR 3809.420, including paragraph (a)(4) (“You must take mitigation measures specified by BLM to protect public lands.”), or otherwise to prevent unnecessary or undue degradation. If there are any questions regarding the appropriateness of such measures, consult the Mining Law Administration Program Lead in the relevant State Office.

The BLM may also identify additional mitigation measures to address potential impacts of approving the plan of operations that may not necessarily rise to the level of constituting unnecessary or undue degradation, including mitigation sited outside the plan of operations boundary. These mitigation measures may be incorporated in the plan of operations decision with the agreement of the operator, along with any mitigation proposed by the operator. Even though these mitigation measures would not be required to prevent unnecessary or undue degradation, they are enforceable if included in the plan of operations decision with the operator's consent.

All mitigation measures should receive appropriate environmental analysis. For additional guidance regarding types of mitigation that may be required for these types of operations, consult the BLM's Surface Management Handbook, H-3809-1.

**F. Additional Mitigation Obligations**

Mitigation obligations identified through implementation of this policy may supplement, but do not replace, mitigation obligations that may be required by or result from formal consultation with other agencies or entities under statutes, such as the Endangered Species Act, National Historic Preservation Act, the Clean Water Act, or the Clean Air Act, regulations, or policies.

**2.7. File and Records Maintenance**

- A.** All records should be maintained in the appropriate case file and comply with any applicable BLM corporate data standards. In addition to the case file, the following records, once submitted by the applicable BLM office, should also be maintained by the National Operations Center:
- 1.** Compensatory mitigation monitoring reports.
  - 2.** The geospatial area impacted by the public land use and that of compensatory mitigation measures and sites, with metadata describing the associated public land use (e.g., case file number) and the duration that the measure and site should be durable.
  - 3.** The geospatial area of mitigation strategies.
- B.** All geospatial data, including maps and geospatial layers, shall comply with national geospatial standards, will be compatible with BLM corporate data standards such as those for the Cadastral National Spatial Data Infrastructure (CadNSDI), PLSS Data Set, and the Land Status System (LR2000).



## CHAPTER 3. THE MITIGATION HIERARCHY

The BLM will implement the five-prong mitigation hierarchy when identifying, considering, and, as appropriate, requiring mitigation, to address reasonably foreseeable impacts to resources. The BLM's aim is to apply the mitigation hierarchy in the manner that achieves the maximum benefit to the impacted resource, consistent with applicable law. First, the BLM will seek to require the public land user to avoid impacts (e.g., by altering project design, location, or timing), consistent with applicable law; then the BLM will seek to require the public land user to minimize impacts (e.g., through project modifications, permit conditions, interim and final reclamation, etc.); and, generally, only if those approaches are insufficient to fully mitigate the impacts from a proposed public land use, will the BLM seek to require the public land user to compensate for some or all of the remaining impacts from the proposed public land use (i.e., residual effects), based on the criteria identified in Handbook Chapter 3.5.B. In limited situations, specific circumstances may exist that warrant deviating from this sequence, such as when seeking to achieve the maximum benefit to impacted resources or when constrained by the terms and conditions of existing land use authorizations or applicable law. In some instances, the BLM might determine that the impacts (including residual effects) of public land uses may be acceptable and will not require mitigation, based on the criteria identified below.

### 3.1. Avoidance

Requiring impacts from public lands uses to be avoided altogether by not taking a certain action or parts of an action, to the extent allowed by law or the terms of existing land use authorizations.

- A. As the first and preferred form of mitigation in the mitigation hierarchy, the BLM will identify, consider, and, as appropriate, require avoidance to address reasonably foreseeable impacts to resources from public land uses.
- B. The need for, type of, and amount of avoidance should be based on applicable mitigation standards, what is appropriate and practicable, and should also include considerations, such as the resource's importance, scarcity, or sensitivity, at all relevant scales, and whether the resource for which adverse impacts will be mitigated has legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts
- C. The BLM will identify, consider, and, as appropriate, require avoidance, at all relevant scales.
  - 1. Site-specific avoidance is usually identified through the project-specific environmental review process and includes, but is not limited to, best management practices (BMPs), such as modifying the proposed public land use to avoid reasonably foreseeable impacts to resources over space (e.g., cultural resource sites, critical hydrological features, sensitive plant species habitat, visual resources, steep slopes) and time (e.g., during springtime breeding activities, the period of ceremonial use of a sacred site).

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2. When considering avoidance at the landscape-scale, the BLM should take into account the conditions and trends of the potentially impacted resources within the relevant landscape of that resource (e.g., migration pathways, seasonal habitats, historic trails, scenic landscapes, nighttime dark skies, air quality), typically through the land use planning process or through a programmatic or large geographic-scale NEPA analysis (as informed by applicable mitigation strategies). Landscape-scale avoidance may include, but is not limited to, right-of-way avoidance and exclusion areas, no surface occupancy requirements/limitations for certain types of development, closing areas to certain types of development, and the designation of areas for conservation (e.g., priority habitat), as well as for concentrated development (e.g., solar energy zones, right-of-way corridors), which focus impacts in one area to avoid impacts dispersed across the landscape.
- D.** Existing legal authorities contain additional protections for some resources that are of such irreplaceable character that minimization and compensatory mitigation measures may not be adequate or appropriate, and therefore avoidance is the appropriate form of mitigation, consistent with applicable law. The BLM will seek to avoid, to the greatest extent practicable, reasonably foreseeable impacts to the National Park System, National Wildlife Refuge System, National Landscape Conservation System (National Conservation Lands), Areas of Critical Environmental Concern, and other special status areas.

**3.2. Minimization**

Requiring the impacts from public lands uses to be minimized by limiting the degree or magnitude of the action and its implementation.

- A.** The BLM will identify, consider, and, as appropriate, require minimization to address those reasonably foreseeable impacts to resources from public land uses that cannot be avoided.
- B.** The need for, type of, and amount of minimization should be based on applicable mitigation standards, what is appropriate and practicable, and should also include other considerations, such as the resource's importance, scarcity, or sensitivity, at all relevant scales, and whether the resource for which adverse impacts will be mitigated has legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts.
- C.** The BLM will identify, consider, and, as appropriate, require minimization, at all relevant scales.
  1. Site-specific minimization includes those mitigation measures identified in law, policies, land use plans, and project-level NEPA analysis that are designed to reduce the level of impact from a specific type of public land use.

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*Examples: reducing the density of oil and gas well pads; interim reclamation; painting facilities a natural background color, reducing the surface area covered by facilities, and screening facilities from view; fitting rights-of-way to the landscape, rather than constructing roads and utility corridors in straight lines across the landscape regardless of the topography or visual impact; restricting public access to tribal sacred sites during identified and routine periods of tribal use; etc.*

2. When considering minimization at the landscape-scale, the BLM should take into account the conditions and trends of the potentially impacted resources with the relevant landscape of that resource (e.g., migration pathways, seasonal habitats, historic trails, scenic landscapes, nighttime dark skies, air quality), typically through the land use planning process or through a programmatic or large geographic-scale NEPA analysis (as informed by applicable mitigation strategies). Landscape-scale minimization may include, but is not limited to, mineral leasing stipulations or allocations in a land use plan, concentrating development in certain areas, landscape-scale disturbance limitations (to the extent allowed by law for certain public land uses), or management actions that minimize impacts of allowed uses.

*Examples: shared use of common infrastructure; landscape-wide disturbance caps (e.g., 3 percent disturbance cap in greater sage-grouse habitat (to the extent allowed by law for certain public land uses)); designation of areas for concentrated development (also a form of landscape-scale avoidance); co-locating infrastructure crossings of National Trails outside of high potential segments; etc.*

### 3.3. Rectification

Requiring impacts from public lands uses to be rectified by repairing, rehabilitating, or restoring the affected environment (40 CFR 1508.1).

- A. The BLM will identify, consider, and, as appropriate, require rectification to address those reasonably foreseeable impacts to resources from public land uses that cannot be avoided or minimized.
- B. The need for, type of, and amount of rectification should be based on applicable mitigation standards, what is appropriate and practicable, and should also include other considerations, such as the resource's importance, scarcity, or sensitivity, at all relevant scales, and whether the resource for which adverse impacts will be mitigated has legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts.

*Example: Reclaiming an oil and gas well pad and access road after the well has been plugged so that the landform and ecosystem function will be restored.*



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*Example: Repairing a rock art panel damaged by dust from heavy truck traffic from an authorized public land use through professional restoration techniques.*

*Example: Rehabilitating a stream impacted by the installation of a pipeline to restore natural stability and riparian systems.*

- C. When requiring rectification, the BLM should ensure impacts are rectified as soon as practicable after the onset of impacts. In some cases, such as for final reclamation, rectification of impacts will occur using a phased approach prior to the termination of the land use authorization.

### 3.4. Reduce or Eliminate Over Time

Requiring impacts from public lands uses to be reduced or eliminated over time by preservation and maintenance operations during the life of the public land use.

- A. The BLM will identify, consider, and, as appropriate, require the reduction or elimination of impacts over time to address those reasonably foreseeable impacts to resources from public land uses that cannot be avoided, minimized, or rectified.
- B. The need for, type of, and amount of reduction or elimination of impacts over time should be based on applicable mitigation standards, what is appropriate and practicable, and should also include other considerations, such as the resource's importance, scarcity, or sensitivity, at all relevant scales, and whether the resource for which adverse impacts will be mitigated has legal, regulatory, land use plan, or policy protections that limit or prevent certain types of impacts.

*Example: For the duration of an access road's period of operation, ensure that the public land user conducts interim reclamation along the road to reduce the width of the disturbed area (after the initial construction's disturbance) and partially restores the vegetation over time.*

- C. When reduction or elimination of impacts over time is required, the BLM should ensure impacts are reduced or eliminated as soon as practicable after the onset of impacts.

### 3.5. Compensation

After considering and applying the first four aspects of the mitigation hierarchy, the BLM will, as appropriate, require that public land users compensate for certain types of residual impacts on the public lands by replacing or providing substitute resources or environments, through restoration, establishment, enhancement, and/or preservation of resources.

The BLM may include these requirements in land use authorizations for which BLM has broad discretion under the law. As mentioned in the Introduction, to the extent that BLM has limited discretion for certain types of land use authorizations, such as those related to uses under the

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Mining Law or decisions related to existing leases and contracts, the BLM's ability to require those public land users to conduct certain types of compensatory mitigation may be limited by applicable law.

**A. Compensatory Mitigation**

The BLM will identify, consider, and, as appropriate, require compensatory mitigation, based on the criteria identified in Handbook Chapter 3.5.B, to address the reasonably foreseeable residual effects to resources from public land uses.

When BLM is planning to take an action itself that would impact the public lands, the BLM should strive to design that land use to avoid residual effects that warrant compensatory mitigation.

By applying the criteria in Handbook Chapter 3.5.B, after applying the first four aspects of the mitigation hierarchy, the BLM will identify the extent to which residual effects warrant compensatory mitigation.

**B. The Need for Compensatory Mitigation**

Consistent with applicable law, the need for compensatory mitigation should be based on applicable mitigation standards, what is appropriate, and the potential for any of the following:

1. **Laws and/or Policies.** Residual effects that inhibit achieving compliance with laws and/or policies, if compensatory mitigation were not required. When considering compensatory mitigation for residual effects, the BLM should also take into consideration the management responsibilities of other Federal agencies, Tribal, State and/or local governments and how the laws or policies of these entities could be inhibited by the residual effects.

*Example: A pipeline will impact the outstandingly remarkable scenic values of a river designated under the Wild and Scenic Rivers Act. In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA process and in the decision document the residual effects to the river that warrant compensatory mitigation in order for the public land user to comply with the Wild and Scenic River Act. An appropriate form of compensatory mitigation may include removing existing infrastructure at other locations within the river's corridor to protect and enhance the outstandingly remarkable scenic values of the river.*

*Example: A large wind energy development project will impact the clear views and spirit travel that a local tribe believes are essential to cultural continuity. In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA*

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*process, consultation under Section 106 of the National Historic Preservation Act (NHPA), and in the decision document the residual effects (“indirect effects” under NHPA) to the tribal values that warrant (compensatory) mitigation in order for the public land user to comply with the NHPA. An appropriate form of compensatory mitigation (“alternative mitigation” under NHPA), in consultation with the applicable tribes, may include acquiring permanent, legal access to another sacred site, which is currently closed to access.*

*Example: A re-alignment of a county road for safety purposes will impact the habitat of black-tailed prairie dogs, which is a BLM special status species (but not a species listed, or a candidate for listing, under the Endangered Species Act). In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA process and in the decision document the residual effects to the habitat that warrant compensatory mitigation in order for the public land use to comply with BLM’s policy on special status species. An appropriate form of compensatory mitigation may include closing and restoring other county or BLM roads in or adjacent to black-tailed prairie dog habitat.*

2. Land Use Plan Objectives. Residual effects that inhibit achieving applicable land use plan’s resource objectives, including any applicable mitigation standards, if compensatory mitigation were not required. When considering compensatory mitigation for residual effects, the BLM should also take into consideration the management responsibilities and interests of other Federal agencies, Tribal, State and/or local governments.

*Example: A proposed transmission line will impact a Special Recreation Management Area (SRMA). In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA process and in the decision document the residual effects to the SRMA that warrant compensatory mitigation in order to achieve the SRMA’s land use plan objectives. An appropriate form of compensatory mitigation may include relocating or constructing a new trailhead and parking area farther from the transmission line.*

If a land use plan amendment is being considered to accommodate residual effects that are incompatible with the existing land use plan, compensatory mitigation may still be appropriate to address the resource impacts.

*Example: A solar energy development will impact an area with a Class II visual resource management objective. In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA process and in the decision document the residual effects to the visual resources that warrant compensatory*



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*mitigation, which are impacts that also necessitated a plan amendment. Appropriate forms of compensatory mitigation may include reducing visual impacts within a landscape of the same or higher scenic quality by reducing the visual contrast of existing power and transmission lines, transformer stations, and associated maintenance road, removing abandoned power poles, and/or reclaiming abandoned or redundant access roads.*

3. Mitigation Strategy. Residual effects to resources that are considered important, scarce, sensitive, or have a protective legal mandate that have been previously identified in a mitigation strategy as warranting compensatory mitigation.

*Example: The Dry Lake Solar Energy Zone Mitigation Strategy identified a scarce type of native vegetation that will continue its decline as a result of new surface disturbance for solar energy development and therefore recommended compensatory mitigation for future residual effects to that vegetation. For solar energy development in the Dry Lake Solar Energy Zone that will impact the scarce vegetation type, in addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, through the NEPA process the BLM considers the mitigation strategy's recommendation and identifies in the decision document the residual effects to the native vegetation that warrant compensatory mitigation. Appropriate forms of compensatory mitigation may include invasive species control, buying out grazing allotments, purchasing conservation easements on private lands for areas at risk from development, or enhancing wildfire preparation and suppression capabilities in that vegetation type.*

4. NEPA Process. Residual effects to resources that are considered important, scarce, sensitive, or have a protective legal mandate that are identified through a NEPA process as warranting compensatory mitigation.

*Example: A new gravel pit will impact the main access trail to an area of local importance for hunting, fishing, and other day use activities. In addition to identifying mitigation related to the first four aspects of the mitigation hierarchy, the BLM identifies through the NEPA process and in the decision document the residual effects to the trail that warrant compensatory mitigation. An appropriate form of compensatory mitigation may include the construction of a new day use parking area and new access trail that would bring day users in from another direction, farther from the gravel pit.*

If the BLM requires a public land user to rectify or eliminate impacts from a public land use at some point in the distant future (e.g., reclaiming an abandoned oil well 40 years from now followed by successful ecosystem restoration 15 years after that), it does not eliminate the need to identify, consider, and, as appropriate, require

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compensation for residual effects that will occur in the interim before reclamation and restoration are complete.

The BLM should consider the four criteria in this section to determine if residual impacts warrant any compensatory mitigation, and if so, the extent to which those residual impacts warrant compensatory mitigation. In other words, when deciding whether compensatory mitigation is warranted, the BLM should consider the extent to which residual impacts should be mitigated to facilitate compliance with law, policy, or land use plan objectives; or to protect resources that are considered important, scarce, sensitive, or have a protective legal mandate, as identified in a mitigation strategy or through the NEPA process.

### C. Residual Effects Not Warranting Compensation

The BLM should generally not require compensatory mitigation for impacts from a proposed public land use to address residual effects to another authorized public land uses (e.g., residual effects to authorized livestock grazing, rights-of-way, solid minerals development, oil and gas development).

*Example: A new oil and gas development project will reduce available vegetation, which is also used as cattle forage in a grazing allotment. The BLM identifies through the NEPA analyses and in the decision document the appropriate avoidance and minimization measures, but residual effects remain. The BLM would not identify compensatory mitigation for the loss of cattle forage, and the subsequent reduction in available animal unit months, as residual effects to another authorized public land use (in this case, grazing) do not warrant compensatory mitigation.*

However, there are two exceptions to this policy, as follows.

1. The BLM will make every effort to avoid authorizing public land uses that reduce the effectiveness of compensatory mitigation sites and restoration projects (i.e., a reversal). In the rare circumstance where the BLM authorizes such a land use, the BLM will apply the mitigation hierarchy, including compensatory mitigation, as appropriate, to address those impacts.
2. It may be appropriate for the BLM to require compensatory mitigation for residual effects to recreational facilities primarily maintained for the direct recreational use of the general public (e.g., a hiking trail system, campsites, boat launch) or for residual effects to authorized range improvements (e.g., fencing).

*Example: Residual effects from construction of a new road through an existing hiking trail system that is available for use by the general public may require compensatory mitigation, such as relocating the trail crossing to a safer area with better sight distance, or installing a new trailhead, as*

*the hiking trail system is a public land use that is primarily maintained for the use of the general public.*

#### **D. Compensatory Mitigation Standard**

When the BLM determines that compensatory mitigation is warranted for addressing a residual effect to a resource, the BLM will seek to apply a no net loss standard, consistent with applicable law, if that resource is important, scarce, sensitive, has a protective legal mandate, or whenever doing so is consistent with established resource objectives. The BLM can implement other mitigation standards, such as achieving net benefit, consistent with applicable law, when the BLM determines such standards are required to achieve resource objectives (Handbook Chapter 5.1.A).

#### **E. The Types of Compensatory Mitigation**

The BLM recognizes four types of compensatory mitigation measures: restoration, establishment, enhancement, and preservation. The BLM should identify the compensatory mitigation measures that will appropriately mitigate the reasonably foreseeable residual effects that warrant compensatory mitigation and achieve the maximum benefit to the impacted resources within the context of the conditions and trends of those resources, at all relevant scales. The BLM will generally consider appropriate the use of mitigation banks, mitigation exchanges, mitigation funds (also known as in-lieu fee programs), and public land user-responsible compensatory mitigation measures to carry out these types of compensatory mitigation, as discussed in Handbook Chapter 3.5.I.

#### **F. Key Attributes of Compensatory Mitigation**

All compensatory mitigation obligations should be commensurate with the reasonably foreseeable residual effects from public land uses that warrant compensation and that compensatory mitigation measures demonstrate the appropriate level of timeliness and are additional.

1. Commensurate. The BLM should ensure that any compensatory mitigation obligation is commensurate with the reasonably foreseeable residual effects from public land uses that warrant compensation (i.e., a compensatory mitigation obligation, to be commensurate, should be reasonably related and proportional to the reasonably foreseeable residual effects from a public land use that warrants compensatory mitigation).
  - a. The type of compensatory mitigation should have a reasonable relationship to the reasonably foreseeable residual effects of the public land use that warrant compensation in order to be considered commensurate. The BLM should evaluate the types of compensatory mitigation measures based on their ability to provide the maximum benefit to the impacted resources.



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*Example: An oil and gas development project will result in the loss of 650 acres of important desert bighorn sheep summer habitat, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that the restoration of 650 acres of degraded desert bighorn sheep summer habitat in another part of the population's range would be required as compensatory mitigation.*

- b. The amount of compensatory mitigation should be proportional to the reasonably foreseeable residual effects of the public land use that warrant compensation in order to be considered commensurate. Proportionality necessitates that the amount of compensatory mitigation is approximately equivalent with the reasonably foreseeable residual effects of the public land use that warrant compensation (including consideration of direct and indirect residual effects).

*Example: A new road has one acre of direct surface impact, but BLM calculates that the road's traffic, noise, and dust creates 10 acres of indirect residual effects in the form of lost habitat, even after the consideration and application of the first four aspects of the mitigation hierarchy. Therefore, one acre of direct surface impact from the construction and use of the new road would be proportional to 10 acres of habitat restoration at another location.*

Proportionality includes factors such as the quality of the resource (at both the impacted site and compensatory mitigation sites), the degree to which the resource is important, scarce, or sensitive, or requires protection (via legal, regulatory, policy, or land use plans), the timeliness of the compensatory mitigation measure, the risk of a measure's failure, and any applicable mitigation standard. In some cases, an impact that affects a relatively small area may be considered proportional to a relatively large area of compensatory mitigation due to these types of factors, or vice versa.

- c. Compensatory mitigation measures should simultaneously be both commensurate with the residual effects and achieve the maximum benefit for the impacted resources. Determining what is commensurate is achieved by carefully identifying the type of and amount of required compensatory mitigation. Determining the maximum benefit is often achieved by carefully identifying the type, siting, and/or timing of the compensatory mitigation measure, with special consideration to any known limiting factors for the impacted resources.

*Example: A new road in a narrow valley will result in the loss of 20 acres of intact riparian vegetation, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that the restoration of 20 acres of*

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*riparian vegetation would be required as compensatory mitigation. While there are many places along the river near the new road in need of riparian restoration, the compensatory mitigation measures will be sited in areas farther away in the same watershed, where the last remaining degraded riparian acres in an important riparian corridor could be restored and the maximum benefit to the watershed's riparian resources could be achieved.*

- d. Whenever compensatory mitigation is required, the BLM should clearly describe in the NEPA analysis and decision document(s) how compensatory mitigation measures are commensurate with the reasonably foreseeable residual effects and achieve the maximum benefit to the impacted resources.
2. Timeliness. The BLM should ensure that compensatory mitigation measures demonstrate the appropriate level of timeliness.
    - a. In developing compensatory mitigation measures' outcomes, the BLM should include timeliness requirements (i.e., description of *when* the measures' outcomes will be achieved).
    - b. The BLM's general preference is to achieve compensatory mitigation measures' outcomes in advance of impacts from a public land use (e.g., by the public land user purchasing credits from a mitigation bank, if appropriate). The implementation of this preference will depend on the quantity, quality, and characteristics of the impacted resource, urgency of the compensatory mitigation needs and the amount and type of the compensatory mitigation measures.

To provide a degree of certainty to the applicant of a land use authorization, it may be appropriate for the BLM to approve a public land use contingent on the public land user achieving the outcomes of the compensatory mitigation measures. Once the outcomes have been achieved, the BLM could then issue a Notice to Proceed (or a similar notice).

*Example: An oil and gas development project will cause residual effects that warrant compensatory mitigation to a mule deer migration corridor and result in increased mule deer highway and winter mortality. To compensate for this residual effect, prior to actual development, the public land user purchases conservation easements on private land within the migration corridor near the highway, and removes livestock, obstructing fences, and out-buildings in order to create a clear mule deer crossing corridor, and funds the state highway department to place automated deer crossing signs, thereby reducing animal/vehicle collisions.*

- c. In other cases, the BLM may allow for the residual effects of a public land use to precede the achievement of a compensatory mitigation measure's outcome if the

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quantity, quality, and characteristics of the impacted resource can withstand such a delay. In this case, the BLM may need to account for the increased uncertainty and the time-value of delayed benefits when determining the compensatory mitigation obligation (Handbook Chapter 3.5.G).

- d. In some cases, it may be appropriate for the public land user to compensate for the reasonably foreseeable slow decline of a resource due to a public land use by phasing in compensatory mitigation measures. In these cases, the compensatory mitigation outcomes should be timed to match the decline in the affected resource.
    - i. If an applicant seeks to implement and receive credit for compensatory mitigation measures performed in advance of the submission of a public land use proposal or prior to the BLM's analysis of the proposed public land use, the BLM (and/or another Federal agency or a State agency) and the applicant should develop a written agreement that documents that the credits are being generated for the purpose of compensating for a future impact and the measures are being designed and implemented in a manner consistent with this handbook. Any credits generated in accordance with these types of agreements should be included as part of the proposed action and analyzed by the BLM in the NEPA process. These agreements should document the Standards for Compensatory Mitigation Mechanisms, as describe in Handbook Chapter 3.5.I.1.
    - ii. The BLM manages many types of resources, many of which may require a different method for calculating the credit values to be used in these agreements. The BLM expects to issue program-specific guidance that outlines valuation tools for determining the amount of credit that a public land user may obtain from certain types of compensatory mitigation. Until that guidance is issued, BLM offices should coordinate, as appropriate, with each other, other Federal agencies, Tribal, State, and/or local governments to act as consistently as possible in developing these agreements with public land users.
3. **Additionality.** The BLM should ensure that any compensatory mitigation that it requires demonstrates additionality (i.e., a compensatory mitigation measure that is demonstrably new and would not have occurred without the compensatory mitigation measure).
- a. **Financial additionality:** The BLM should ensure that compensatory mitigation measures are in addition to any existing projects funded or foreseeably expected to be funded, that benefit the same resources in the same way at the same sites.
    - i. Compensatory mitigation measures on Federal land will demonstrably augment, rather than duplicate, similar projects funded or foreseeably expected to be funded by Federal appropriations, including those projects identified in the BLM's annual work plan. However, the identification of a



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similar project in a land use plan or a strategy document does not necessarily mean that a compensatory mitigation action is not additional.

*Example: In a land use plan, the BLM has identified 129,000 acres in need of habitat restoration; however, Congress has not appropriated sufficient funds to the BLM to perform all of this restoration. As a result, it would be considered “additional” if a public land user implemented appropriately commensurate compensatory mitigation measures that restored some of the habitat that BLM could not restore.*

- ii. Compensatory mitigation measures on non-Federal land will demonstrably augment, rather than duplicate, similar projects funded or foreseeably expected to be funded by Federal, Tribal, State, and/or local governments, and/or private entities.
- b. Resource additionality: The BLM should ensure that compensatory mitigation measures are demonstrably new and would not have occurred without the compensatory mitigation measure.
- c. The BLM should not consider new compensatory mitigation obligations associated with a new land use authorization to be additional if they duplicate existing compensatory mitigation obligations associated with an existing land use authorization, even if the existing compensation mitigation obligations have not yet been implemented.

## **G. The Amount of Compensatory Mitigation**

Determining the need for compensatory mitigation (Handbook Chapter 3.5.B) is a prerequisite for determining the appropriate amount of compensatory mitigation.

The BLM should determine the amount of compensatory mitigation that is commensurate to the residual effects that warrant compensatory mitigation and that is consistent with any applicable mitigation standard. The BLM should be transparent and provide a clear rationale for the amount of compensatory mitigation in the NEPA analysis and decision document(s).

The following process should be used as a framework to determine the amount of compensatory mitigation.

1. *Determining the Magnitude of the Impacts to the Resource:* After determining that residual effects to a resource warrant compensatory mitigation, the BLM needs to determine the magnitude of those impacts. To do so, the BLM needs to determine:

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- a. The baseline condition and trend of the resource, in terms of quantity, quality, and characteristics, at the impacted site.<sup>7</sup> The BLM should consider if the current quantity, quality, and characteristics of the resource is at a desired condition (e.g., ideal habitat size, at its ecological potential, fulfilling a key role), and if the trend in the quantity, quality, and characteristics of the resource is improving, declining, or maintaining. This analysis will likely require consideration of the condition and trend at the site of the impact and within the relevant landscape of the resource.
- b. The amount of change to the baseline condition and trend due to the residual effects from the public land use, in terms of quantity, quality, and characteristics (after consideration and implementation of the first four aspects of the mitigation hierarchy). The BLM should determine how much change from baseline there will be in the quantity, quality, and characteristics of the resource due to the residual effects, and how that change will affect achieving the desired condition and trend of the resource. These changes may be realized at the site and/or across the landscape (e.g., will a change in quality at the site cause a detectable change in quality across the landscape?).

This analysis should consider both the direct and indirect impacts. Direct impacts typically consider the footprint of the land use authorization. Indirect impacts vary widely by the type of public land use and the type of resource, but generally are most intense near the impact site and gradually decrease as the distance from the impact site increases.

2. *Determining the Magnitude of the Benefits Needed to Adhere to the Mitigation Standard:* The BLM should compare the magnitude of the impacts to the resource, as determined in Step 1, to any applicable mitigation standard for the resource, in order to determine the magnitude of the benefits to the resource that is needed to be achieved through compensatory mitigation. For example, if there is a no net loss mitigation standard established in the land use plan for the resource, the magnitude of the impacts to the resource should equal the magnitude of the benefits to the resource from compensatory mitigation measures.

If no mitigation standard yet exists for the resource, the BLM should use this step in the process to consider the project-specific mitigation standard for the resource (through the decision document supported by appropriate NEPA analysis). It is BLM policy to seek to apply a no net loss standard, consistent with applicable law, if that resource is important, scarce, sensitive, has a protective legal mandate, or whenever doing so is consistent with established resource objectives, as described in Handbook Chapter 3.5.D. The BLM can implement other mitigation standards, such as achieving net benefit, consistent with applicable law, when the BLM determines such standards are required to achieve resource objectives.

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<sup>7</sup> In some cases, the quantity, quality, and characteristics of a resource can be addressed in a single metric (e.g., functional acres)

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In any case, the magnitude of the benefits to the resource should be commensurate with the magnitude of the impacts to the resource that warranted compensatory mitigation.

3. *Determining the Amount of Compensatory Mitigation Needed to Achieve the Magnitude of the Benefits:* The BLM needs to determine the amount of compensatory mitigation necessary in order to achieve the appropriate magnitude of the benefits to the resource, as determined in Step 2. The amount necessary to achieve the appropriate benefit is dependent on the compensatory mitigation type (Handbook Chapter 3.5.E, e.g., preservation or restoration) and the compensatory mitigation site (Handbook Chapter 3.5.H)

Compensatory mitigation types and compensatory mitigation sites can achieve various amounts of benefits to the resource with various amounts of effort. For example, a small amount of a much-needed compensatory mitigation measure at a critically-important compensatory mitigation site can produce more resource benefit than a large of amount of a low-value compensatory mitigation measure at a low-importance compensatory mitigation site.

To identify the achievable benefits from compensatory mitigation types at compensatory mitigation sites, the BLM needs to determine:

- a. The baseline condition and trend of the resource, in terms of quantity, quality, and characteristics, at the compensatory mitigation site. The BLM should consider if the current quantity, quality, and characteristics of the resource is at a desired condition (e.g., ideal habitat size; at its ecological potential; fulfilling a key role), and if the trend in the quantity, quality, and characteristics of the resource is improving, declining, or maintaining. This analysis will likely require consideration of the condition and trend at the compensatory mitigation site and within the relevant landscape of the resource.
- b. The amount of change to the baseline condition and trend due to the compensatory mitigation measures, in terms of quantity, quality, and characteristics (after consideration and implementation of the first four aspects of the mitigation hierarchy). The BLM should determine how much change from baseline there will be in the quantity, quality, and characteristics of the resource due to the compensatory mitigation measures, and how that change will provide a benefit to the desired condition and trend of the resource. These changes may be realized at the site and/or across the landscape (e.g., will a change in quality at the site cause a detectable change in quality across the landscape?).

In this step, the BLM should consider the type of compensatory mitigation measures that will be implemented, as this will affect the amount of change to the baseline condition and trend that can be realized. This step will determine the amount of compensatory mitigation necessary at the site in order to achieve the appropriate magnitude of the benefits to the resource.



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The same methods, including metrics, used to describe the magnitude of impacts to the resource (as compared to baseline conditions) from the public land use should be used to describe the magnitude of benefits to the resource (as compared to baseline conditions) from compensatory mitigation measures (e.g., "functional acres" impacted, and "functional acres" benefitted).

4. *Considering Risk:* The BLM should consider the risk of mitigation ineffectiveness, or the loss of durability, when determining the amount of compensatory mitigation, including consideration of the risk from foreseeable changing circumstances (e.g., climate change, fire, invasive species). It is a best practice to gain understanding of this risk through analysis in the NEPA process. It may be possible to account for this risk by carefully designing compensatory mitigation measures or by the use of credit reserves, where additional mitigation measures are conducted, but held in reserve and used only if a compensatory mitigation measure fails.
5. *Considering Timeliness:* The BLM may determine that it should adjust the amount of compensatory mitigation to account for any lack of timeliness with the compensatory mitigation measures.
6. *Considering the use of Mitigation Banks, Mitigation Exchanges, and Mitigation Funds:* Appropriate compensatory mitigation mechanisms are described in Handbook Chapter 3.5.I. When a public land user is relying on three of the four appropriate mechanisms (mitigation banks, mitigation exchanges, and mitigation funds) to fulfill a need for compensatory mitigation, the BLM may need to take additional steps to ensure that the amount of compensatory mitigation required is equivalent to the amount of compensatory mitigation provided by the compensatory mitigation mechanism.
  - a. *Mitigation Banks and Mitigation Exchanges:* When a public land user purchases credits from the responsible party of a mitigation bank or a mitigation exchange to fulfill the need for compensatory mitigation of residual effects, the BLM should verify that the credits are equivalent to the required compensatory mitigation obligation. The BLM should review crediting methodologies adopted by the mitigation banks and mitigation exchanges to help make this equivalency determination. Credit valuation and crediting methodologies may differ depending on the type of bank or exchange and how the managers of those banks or exchanges, or the relevant regulatory agency, are determining credit value.
  - b. *Mitigation Funds:* When a public land user makes a financial contribution to a mitigation fund to fulfill the need for compensatory mitigation of residual effects, the BLM should convert each required compensatory mitigation measure into monetary terms in order to determine the appropriate contribution to the fund (i.e., how much does it cost to perform such measures?).

This determination should be based on full cost accounting and include, as appropriate, expenses such as fund administration, land acquisition, durability measures, project planning and design, materials, labor, monitoring, and reporting. This determination should also take into account contingency costs to account for uncertainties and risk, any necessary financial assurances, and long-term management for the duration of the impacts.

The BLM should review funding methodologies adopted by mitigation funds to help make this funding determination. For non-market/ecosystem services-based compensatory mitigation measures, methods may exist to estimate the economic/monetary value of the compensatory mitigation measure (e.g., benefit transfer, revealed preference, contingent valuation, avoided cost, etc.).<sup>8</sup>

## **H. Compensatory Mitigation Sites**

To the extent allowed by law, including existing regulations, the BLM should ensure that activities conducted to comply with compensatory mitigation measures are located on compensatory mitigation sites where the maximum benefit to the impacted resource can feasibly be achieved and maintained and that will provide for the appropriate types and amount of compensatory mitigation measures. Compensatory mitigation sites can be identified in advance of anticipated public land uses in land use plans (Handbook Chapter 5.1.C) and/or mitigation strategies (Handbook Chapter 4.4.I) or can be identified through the NEPA process for proposed public land uses (Handbook Chapter 6.7).

1. The BLM should identify a compensatory mitigation site without implying a preference for siting it closer to or farther from the impacted site, as long as a reasonable relationship is maintained between the impacts of the public land use and the compensatory mitigation measure(s) being implemented at that site. It should also be determined without implying a preference for Federally managed lands. If sited on BLM-managed lands, the BLM should consider other potential uses of that land that are incompatible with the compensatory mitigation site. If sited on non-BLM-managed lands, the BLM will require the consent of the landowner or manager.
  - a. For management of a compensatory mitigation site on BLM-managed lands, the BLM will ensure, in coordination with the responsible party for the compensatory mitigation measure, that the site will receive adequate administration, durability, monitoring, adaptive management, reporting, and funding for the duration of the impacts from the public land use.
  - b. For management of a compensatory mitigation site on non-BLM-managed lands, the BLM should document the landowner's or manager's consent through a written agreement between applicable parties that outlines the terms and conditions of the arrangement, including how the BLM or other entity will gain access to conduct monitoring.

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<sup>8</sup> Federal Resource Management and Ecosystem Services Guidebook; <https://nespguidebook.com/>

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2. The BLM should assess and document the baseline condition of compensatory mitigation sites to determine the site's potential for achieving benefits to the resources. The baseline condition should include consideration of the conditions and trends of resources, in terms of quantity, quality, and characteristics, and the bio-physical aspects of the site that support the resources (e.g., soil conditions), at all relevant scales. Understanding the baseline conditions of the relevant resources at a compensatory mitigation site is important to ensure that the site has the potential to achieve the required outcome(s). The foreseeable change in baseline condition and the potential to achieve the required outcome(s) should be primary factors in selecting compensatory mitigation sites.
3. In many cases, the maximum benefit can be found where there is potential to leverage other conservation-related projects funded by Federal or non-Federal entities. The principles of additionality still apply (Handbook Chapter 3.5.F.3).

*Example: An ideal compensatory mitigation site is included within a BLM-identified Healthy Lands Focal Area, where Federal and non-Federal funds are being used to create healthy landscapes through a variety of restoration and preservation projects. As Healthy Lands Focal Areas encompass large landscapes, in most cases, additionality can be demonstrated for compensatory mitigation measures, as the compensatory mitigation funds can be used to supplement (not replace) the other funds being invested in creating the healthy landscape.*

4. Multiple compensatory mitigation sites may be appropriate for a single public land use to accommodate the variety of resources with residual effects.
5. Compensatory mitigation sites may provide opportunities for spatially overlapping compensatory mitigation measures.
  - a. A single compensatory mitigation site may provide opportunities for a public land user to mitigate the residual effects under multiple compensatory mitigation measures.

*Example: A high-voltage transmission line project will result in the degradation of 480 acres of priority Greater sage-grouse habitat and the loss of the historic visual setting along 6 miles of a National Historic Trail, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that enhancement of 960 acres of Greater sage-grouse habitat and the restoration of 6 miles of historic visual setting along the National Historic Trail would be required as compensatory mitigation. To reduce the overall cost of compensatory mitigation and increase the value of the*



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*compensatory mitigation measure, a compensatory mitigation site was selected along a high potential segment of the National Historic Trail (with a similar type of historic setting to the impacted site) and was in a priority habitat management area of Greater sage-grouse habitat. The compensatory mitigation measures included removing abandoned power lines, which provided a benefit to the greater sage-grouse (lower predation risks) and improved and protected the National Historic Trail's historic setting.*

- b. For compensatory mitigation obligations met through mitigation banks and mitigation exchanges, the BLM should be aware of the similar, but distinct concepts of “credit bundling” and “credit stacking”.
  - i. *Credit bundling* is when a compensatory mitigation credit representing a measure that benefited multiple overlapping resources at a single compensatory mitigation site is sold by a mitigation bank or mitigation exchange to a public land user as single combined credit. The BLM should be aware that a public land user under a compensatory mitigation obligation to the BLM may be able to purchase a single credit from a mitigation bank or mitigation exchange to meet its compensatory mitigation obligation for several impacted resources, if the credit is associated with a measure that benefitted each of the impacted resources.

*Example: If a public land user is required to conduct compensatory mitigation for impacts to 10 acres of sagebrush and 10 acres of sagebrush-obligate bird habitat, they may purchase 10 combined credits from a mitigation bank that represent 10 acres of restoration that improved both sagebrush and sagebrush-obligate bird habitat.*

- ii. *Credit stacking* is when a compensatory mitigation credit representing a measure that benefited multiple overlapping resources is sold by a mitigation bank or mitigation exchange to a public land user as separate and distinct credits. The BLM should not view credits that a public land user has obtained through credit stacking to be used to fulfill compensatory mitigation obligations, as this practice raises concerns regarding additionality, in that the same credit (i.e., the same compensatory mitigation measures) could be sold multiple times (i.e., double dipping).

*Example: If a public land user is required to conduct compensatory mitigation for impacts to 10 acres of sagebrush and 10 acres of sagebrush-obligate bird habitat, they may not purchase 10 combined credits from a mitigation bank, if the bank has already sold the sagebrush aspects or the sagebrush-obligate bird aspects of those 10 credits to another entity. In this example, each*

*of the 10 combined credits generated by this bank can be sold as combined credits, sagebrush-only credits, or bird-only credits. Once sold, the credits cannot be sold again.*

## **I. Compensatory Mitigation Mechanisms**

Among the compensatory mitigation mechanisms that the BLM will generally consider appropriate, consistent with applicable law are: mitigation banks,<sup>9</sup> mitigation exchanges, mitigation funds (also known as in-lieu fee programs), and public land user-responsible compensatory mitigation measures.

*Example: A large wind energy development project will result in the degradation of 235 acres of a sensitive plant species habitat, even after the consideration and application of the first four aspects of the mitigation hierarchy. Through the NEPA analysis and in the decision document, the BLM determines that the restoration of 235 acres of this plant species' habitat would be required as compensatory mitigation. To fulfill this compensatory mitigation requirement, the public land user could purchase credits from a mitigation bank or mitigation exchange, in which the credits were generated by restoring this plant species' habitat at a vital offsite location.*

While it is permissible for the BLM to hold mitigation funds, the BLM is discouraged from doing so due to increased workloads on BLM staff and BLM overhead rates. If the BLM does hold mitigation funds, the full costs to hold the funds should be included when determining the amount of compensatory mitigation, generally consistent with applicable cost recovery authorities. Refer to Appendix 2 for additional policies and procedures regarding the BLM's management of mitigation funds.

In the case where the BLM is not the manager of the mitigation fund, the BLM will not assume, by agreement or otherwise, control over the use of such funds. This includes direct control, such as by the controlling vote in a decision-making group, or constructive control, such as by having the power to veto an expenditure decision. Consistent with applicable law, however, the BLM may participate in decisions as to their use, so long as the BLM does not have ultimate decision-making authority. The purpose of this restriction is to ensure that such funds are not determined to be Federal funds and thereby subject to Federal rules governing their expenditure. The BLM retains the ability to ensure that required mitigation obligations are implemented and effective.

1. Standards for Compensatory Mitigation Mechanisms. The BLM should hold all compensatory mitigation mechanisms, if used to meet a compensatory mitigation

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<sup>9</sup> Historically, mitigation banks and mitigation funds have focused on compensatory mitigation associated with the Clean Water Act and the Endangered Species Act. Examples of these compensatory mitigation mechanisms, including documentation, siting, and reports, can be viewed on the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), managed by the U.S. Army Corps of Engineers.  
<https://ribits.ops.usace.army.mil/ords/f?p=107:2:.....>

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obligation required by the BLM, to high and equivalent standards. Consistent with applicable law, the BLM should verify and document that the responsible party for a compensatory mitigation mechanism has:

- a. Established and described clearly defined and measurable *outcomes* and *performance standards* for the compensatory mitigation measures, including the types and amounts of resources that will be restored, established, enhanced, and/or preserved, and described how these outcomes will contribute to achieving established resources objectives.
- b. Described the factors considered during the *site selection* process, including how the sites will address landscape-scale needs.
- c. Ensured and described how the *durability* of the compensatory mitigation measures and sites will be maintained.
- d. Assessed and documented the *baseline conditions* of the compensatory mitigation sites, with consideration to the conditions and trends of resources at all relevant scales.
- e. Implemented adaptive management, including a comprehensive *monitoring* program, which considers the conditions and trends of resources at all relevant scales, to assess the effectiveness of compensatory mitigation measures and identify any need for management changes to achieve the required mitigation outcomes. As described in Handbook Chapter 2.1.F, whenever possible, effectiveness monitoring should be designed around the same or compatible methods, including metrics, as used to identify resource objectives (e.g., in a land use plan), measure impacts, and/or define mitigation measures' outcomes, and should be incorporated into existing monitoring programs and sampling grids.
- f. Developed and implemented a *plan* for compensatory mitigation measure(s) and site(s) that describes:
  - i. Specifications for implementing the compensatory mitigation measures (e.g., timing, method, source materials, specific geographic area, etc.).
  - ii. The schedule and plan to maintain compensatory mitigation measures for the duration of the impacts.
  - iii. Any adaptive management triggers, if necessary, in order to achieve the required outcomes of the compensatory mitigation measures.
  - iv. The accounting, tracking, and reporting of measures/funds/credits.



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- g. Demonstrated financial solvency sufficient to cover all compensatory mitigation obligations (including durability, monitoring, adaptive management, and reporting) for the duration of the impact from the associated public land use(s).

While each of these standards should be required, regardless of the compensatory mitigation mechanism, the degree of detail to be used in describing how a compensatory mitigation mechanism is meeting each of these standards should be determined in relation to the amount and type of compensatory mitigation measures.

2. **Approval of Compensatory Mitigation Mechanisms.** A written agreement should be in place between the responsible party (i.e., the entity accountable for fulfilling all aspects of mitigation obligations) for a compensatory mitigation mechanism, the BLM (and/or another Federal or State agency), and any other applicable parties, which documents the standards described above. The agreement should outline the terms and conditions of the arrangement, including how the BLM or another entity will conduct monitoring.
3. **Determining the Compensatory Mitigation Mechanism for a Compensatory Mitigation Obligation.** The BLM will discuss compensatory mitigation mechanism options with the land use authorization's applicant. Public land users who have compensatory mitigation obligations may meet those obligations via a compensatory mitigation mechanism certified or approved by BLM (or certified by another Federal or State agency if the compensatory mitigation mechanism is designed in a manner consistent with this policy). The BLM will determine the appropriate mechanism(s), taking into account the preferences of the applicant and the standards and preferences described in this policy. In order for the BLM to approve the use of a compensatory mitigation mechanism to satisfy compensatory mitigation obligations:
  - a. The compensatory mitigation measures performed by the compensatory mitigation mechanism must have a reasonable relationship to the reasonably foreseeable residual effects from the public land use (Handbook Chapter 3.5.F.1).
  - b. The compensatory mitigation measures performed by the compensatory mitigation mechanism should be the type of measure(s), sited in the appropriate location(s), that will achieve the maximum benefit for the impacted resources, within the context of the conditions and trends of resources, at all relevant scales, on public or private lands (with a written agreement with the willing landowner).

The BLM's general preference is to achieve compensatory mitigation outcomes in advance of the impacts of a public land use (Handbook Chapter 3.5.F.2), which may affect how the BLM will consider compensatory mitigation mechanism(s) that are proposed to be used to satisfy compensatory mitigation obligations. Additionally, compensatory mitigation mechanisms used to satisfy compensatory mitigation obligations must appropriately account for the risk of failure of compensatory mitigation measures (Handbook Chapter 3.5.G.4).

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4. Consistent with applicable law, policies, and land use plans, the BLM may authorize (e.g., by issuing a lease, a right-of-way, etc.) the use of BLM-managed lands as the site for a compensatory mitigation mechanism. Any type of compensatory mitigation mechanism may be implemented on BLM-managed lands, even if the compensatory mitigation measures will be used to mitigate residual effects from public land uses occurring on non-BLM-managed lands. In this case the BLM should take appropriate administrative actions to ensure the durability of the site(s) (Appendix 1).

## CHAPTER 4. MITIGATION STRATEGIES

Mitigation strategies identify, consider, and communicate potential mitigation needs and mitigation measures in a geographic area, at relevant scales, well in advance of anticipated public land uses (BLM-proposed and externally proposed). The BLM should prepare mitigation strategies where the condition of resources (including their values, services, and/or functions) is declining or has a reasonable potential to decline and new impacts to those resources are reasonably foreseeable, or where resources would otherwise benefit from advance consideration of landscape-scale mitigation. Effective mitigation strategies are created and maintained by fully engaging stakeholders in the process. Mitigation strategies will help to increase the effectiveness, consistency, and transparency of mitigation by shifting away from a reactive and permit-by-permit approach to a more efficient, proactive model that identifies mitigation standards (if they do not already exist) and pre-identifies and pre-considers mitigation measures. Mitigation strategies will assist the BLM to better anticipate reasonably foreseeable impacts, strategically apply the mitigation hierarchy, and generate better outcomes for impacted resources.

As discussed in Handbook Chapter 4.5, mitigation strategies may be developed: (1) through the NEPA process to inform a programmatic or large geographic-scale analysis; or (2) independent of the NEPA process and any proposed action or decision (and used to inform future decision-making processes).

### 4.1. Benefits of Mitigation Strategies

Mitigation strategies are developed well in advance of the need to implement mitigation, within a transparent and meaningful stakeholder engagement process, and based on the best available science. The benefits of mitigation strategies include:

- A. Facilitating meaningful, strategic, transparent, and deliberative engagement from all stakeholders on how best to achieve the sustained yield of the resources in a geographic area, especially when a potential exists for substantial and/or controversial impacts;
- B. Reaching across administrative boundaries (e.g., BLM Field/District Offices, other Federal/State/Tribal land management jurisdictions, County/State boundaries) and providing opportunities for consistent and strategic application across a geographic area;
- C. Helping increase permitting efficiency and financial certainty for land use authorization applicants by pre-identifying and pre-evaluating potential mitigation measures;
- D. Strategically identifying mitigation measures and their associated compensatory mitigation sites across a geographic area to provide opportunities to achieve maximum benefits for impacted resources; and
- E. Enhancing the ability of Federal agencies, Tribal, State and/or local governments, as well as private entities to invest in more effective and larger-scale mitigation efforts to achieve multiple resource objectives through transparent prioritization of investments and pooling of resources.



## 4.2. Scope of Mitigation Strategies

The BLM should develop mitigation strategies that encompass one of the following three scopes:

- A. All Resources and Uses:** A mitigation strategy that considers all or most of the foreseeable public land uses and associated reasonably foreseeable impacts to resources in a geographic area. This type of mitigation strategy may be particularly helpful in informing a future land use plan amendment or revision (Handbook Chapter 5.2).

*Example: A mitigation strategy that considers all of the reasonably foreseeable impacts to resources (e.g., wildlife, plants, air quality, cultural, visual) expected from all the foreseeable public land uses (e.g., oil and gas, rights-of-way, mining, recreation) in a geographic area.*

- B. Public Land Use Based:** A mitigation strategy that considers a single or limited set of foreseeable public land uses and associated reasonably foreseeable impacts to resources in a geographic area.

*Example: A mitigation strategy developed for a BLM solar energy zone, which considers the reasonably foreseeable impacts to resources expected from the solar energy development in that zone.*

- C. Resource Based:** A mitigation strategy that considers a single or limited set of resources, which are expected to be impacted by a variety of foreseeable public land uses.

*Example: A mitigation strategy developed for a greater sage-grouse management zone, which considers all of the reasonably foreseeable impacts to greater sage-grouse habitat from all of the foreseeable public land uses in that management zone.*

## 4.3. Geographic Area of Mitigation Strategies

The BLM should define the geographic area of a mitigation strategy to include the relevant landscape necessary to sustain the relevant resources. This geographic area should be as narrow or as broad as necessary to sustain or otherwise achieve established resource objectives and to effectively mitigate for foreseeable impacts. The BLM should define the geographic area for mitigation strategies with consideration to (not in priority order):

- A.** The scientifically informed distribution of the resources that will be foreseeably impacted by the public land uses considered in the mitigation strategy (e.g., watersheds, airsheds, species' ranges, rare plant distributions, cultural landscapes, viewsheds, etc.).
- B.** The geographic extent of public land uses (e.g., oil and gas formations, coal basins, solar energy zones, transmission corridors, recreation areas, etc.).

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- C. Previously defined geographic areas (e.g., EPA’s ecoregions, habitat management zones, critical habitat, etc.).
- D. Existing geo-socio-political geographic areas (e.g., BLM planning areas, individual US State boundaries, southwestern US States, Pacific Coast counties).
- E. Existing mitigation programs (e.g., State-managed compensatory mitigation programs).

**4.4. Components of Mitigation Strategies**

The BLM should include in mitigation strategies, at minimum, a description of the following components. Many of these components are related to similar components of the NEPA analysis process (e.g., affected environment, environmental consequences) and therefore some components of a Mitigation Strategy may be able to inform some components of a NEPA analysis.

- A. A description of the public land uses expected in the geographic area of the mitigation strategy and resources that are considered important, scarce, sensitive, or have a protective legal mandate that may be reasonably foreseeably impacted by those public land uses (within the scope of the mitigation strategy).
- B. A description of the applicable resource objectives (e.g., BLM’s land use plan objectives, a State agency’s resource objectives, etc.), at all relevant scales, including any mitigation standards that exist for these resources.

If a mitigation standard does not yet exist for a focal resource, a mitigation strategy should identify a mitigation standard for that resource (which may be a recommendation or a decision, depending on if the strategy has been analyzed through the NEPA process and has an associated decision document; see Handbook Chapter 4.5). If the mitigation strategy is not incorporated in a decision document, supported by adequate NEPA analysis, then the BLM should consider the findings and recommendations in the mitigation strategy through future decision-making processes.

- C. A description of baseline conditions and trends of these resources, at all relevant scales, including how the conditions and trends are expected to change due to the reasonably foreseeable impacts of public land uses and other changing circumstances (e.g., climate change, fire, invasive species).
- D. A description of mitigation measures to avoid, minimize, rectify, and/or reduce/eliminate over time the reasonably foreseeable impacts to these resources, which may include referencing relevant land use plans that include these types of mitigation measures.
- E. A description of the types of reasonably foreseeable residual effects to these resources that might be expected.

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- F.** A description of the potential need for compensatory mitigation by assessing the reasonably foreseeable residual effects that may warrant compensatory mitigation (with consideration of the criteria identified in Handbook Chapter 3.5.B).
- G.** An evaluation and prioritization of the types of compensatory mitigation measures that are likely appropriate for the reasonably foreseeable residual effects that warrant compensatory mitigation, including clearly defined and measurable outcomes for those types of measures. When conducting this analysis, the BLM should consider the types of compensatory mitigation measures previously identified in land use plans and/or relevant and existing conservation strategies.
- H.** A recommended or required amount of compensatory mitigation measures needed to mitigate for the likely reasonably foreseeable residual effects that warrant compensatory mitigation, with respect to the mitigation standards (if they exist) for the impacted resources.

If the extent of the reasonably foreseeable residual effects is unknown at the time of the mitigation strategy's development, it is important to provide formulaic and/or scalable measures (e.g., compensatory mitigation measures per acre of impact) that can be used to determine the amount of compensatory mitigation when the residual effects become calculable.

- I.** An evaluation and prioritization of compensatory mitigation sites that will maximize the benefit for the resources that will likely have residual effects that may warrant compensation, including considerations of each site's ability to provide benefits to multiple resources, importance in the geographic area, durability, and additionality. When conducting this analysis, the BLM should consider compensatory mitigation sites previously identified in land use plans and/or relevant and existing conservation strategies.

In some cases, the evaluation and prioritization of the types of compensatory mitigation measures (Handbook Chapter 4.4.G) and this section may be merged to reduce repetition (e.g., where evaluation of compensatory mitigation measures is dependent on the siting of those measures).

- J.** A description of appropriate compensatory mitigation mechanisms in the geographic area (e.g., mitigation banks, mitigation exchanges, mitigation funds, public land user-responsible compensatory mitigation measures).

In some cases, the evaluation and prioritization of compensatory mitigation sites (Handbook Chapter 4.4.I) and this section may be merged to reduce repetition (e.g., where mitigation banks exist and are both a priority compensatory mitigation site and an appropriate compensatory mitigation mechanism).

- K.** A description of how equivalency will be determined between compensatory mitigation mechanisms.



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1. It may be appropriate to convert the identified amount of compensatory mitigation measures (Handbook Chapter 4.4.H) into a quantity of credits to facilitate the use of mitigation banks and mitigation exchanges. Similarly, it may be appropriate to convert the compensatory measures into monetary terms to facilitate the use of mitigation funds. The BLM should review methodologies developed by the mitigation banks, mitigation exchanges, mitigation funds, and/or other experts to help make this conversion.

Credit valuation and crediting methodologies may differ depending on the type of bank or exchange and how the managers of those banks or exchanges, or the relevant regulatory agency, are determining credit value. The BLM manages many types of resources, many of which may require a different method for calculating the credit values. The BLM expects to issue program-specific guidance that outlines valuation tools for determining the amount of credit that a public land user may obtain from certain types of compensatory mitigation. Until that guidance is issued, BLM offices should coordinate, as appropriate, with each other, other Federal agencies, Tribal, State, and/or local governments to act as consistently as possible in making determinations about the quantity of credits.

2. As a mitigation strategy may be active for several years, any credit or monetary determinations should be reviewed and updated over time, as necessary.
- L. A description of actions necessary to achieve durability of, and to monitor, adapt (if necessary), and report on, mitigation.

#### 4.5. Mitigation Strategies: Recommendations and Decisions

The BLM may develop and consider a mitigation strategy in one of two ways: (1) through the NEPA process to inform a programmatic or large geographic-scale analysis; or (2) independent of the NEPA process and any proposed action or decision. When developing a mitigation strategy, whether within or independent of the NEPA process, the BLM should fully engage its stakeholders, consistent with the Federal Advisory Committee Act (FACA) and other applicable law, including the public and affected Federal agencies, Tribal, State and/or local governments.

- A. A mitigation strategy, or key components of a mitigation strategy, may be developed and analyzed through a NEPA process, such as within a programmatic or large geographic-scale NEPA analysis (e.g., a geographically large oil/gas field development EA/EIS). In this case, appropriate mitigation from the mitigation strategy should be incorporated into the resulting decision document(s).
- B. A mitigation strategy may be developed independent of a NEPA analysis and associated decision document(s). Mitigation strategies developed in this manner will result in mitigation findings and recommendations, not agency decisions, and the BLM should use those findings and recommendations to inform future decision-making processes.

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For this type of mitigation strategy, the BLM should analyze relevant aspects of mitigation strategies in at least one alternative of the NEPA analyses for relevant land use planning or proposed public land uses. The resulting decision document(s) associated with the NEPA analysis may or may not include the mitigation strategy's recommendations.

- C. A mitigation strategy should be reviewed and updated over time and based on the best available science.

#### **4.6. Utilizing Existing Conservation and Restoration Strategies**

Existing conservation and restoration strategies, from existing efforts and partnerships, including those produced by other Federal agencies, Tribal, State and/or local governments, often include many components of mitigation strategies, as described in Handbook Chapter 4.4. For example, a conservation strategy developed by a multi-stakeholder group for a rare plant species, which identifies restoration focal areas for the species, may be useful to incorporate into a mitigation strategy's discussion of compensatory mitigation sites. The BLM should strive, as appropriate, to incorporate or be consistent with these existing strategies when developing new mitigation strategies.

## CHAPTER 5. MITIGATION IN LAND USE PLANNING (INTERIM)

*[This section on mitigation in land use planning is interim policy and will be superseded by relevant updates to the BLM's land use planning handbook.]*

The land use planning process provides one method for identifying, considering, and, as appropriate, requiring mitigation well in advance of anticipated public land uses. Additionally, the land use planning process provides an opportunity to incorporate relevant components of a mitigation strategy into a land use plan (Handbook Chapter 4). The land use plan can identify resource objectives and associated mitigation standards, land use allocations, and management actions to facilitate the application of appropriate mitigation for public land uses. Also, to support the implementation of durable compensatory mitigation measures on BLM-managed lands, the BLM can support or identify compensatory mitigation sites with land use allocations that limit or exclude incompatible uses of those sites, consistent with applicable law.

During the land use planning process, consistent with applicable law, the BLM will consider and, as appropriate, include in the land use plan:

- A. Scientifically informed and measurable land use plan objectives for resources, which include mitigation standards for resources that are considered important, scarce, sensitive, or have a protective legal mandate (e.g., no net loss, net benefit).
- B. Land use allocations that limit or exclude certain uses (e.g., right-of-way exclusion areas, closures or constraints to fluid mineral leasing) or concentrate certain uses in defined areas or corridors (e.g., right-of-way corridors) in order to avoid and minimize impacts to resources from public land uses. The land use planning process may not be used as a substitute for a withdrawal to close lands to the operation of the Mining Law.
- C. Management actions (e.g., best management practices) that help to support the land use plan's resource objectives, including applicable mitigation standards.
- D. Land use allocations that support or identify compensatory mitigation sites on BLM-managed lands and limit or exclude incompatible uses of those sites. Compensatory mitigation sites may be located within formal designations, such as Areas of Critical Environmental Concern (ACEC) or units of the National Conservation Lands, or may be located within general geographic areas without a formal designation where incompatible uses are excluded or restricted.

### 5.1. Mitigation in Land Use Plans

During land use plan revisions, and in some cases, land use plan amendments, the BLM should identify mitigation standards, incorporate the mitigation hierarchy, and identify compensatory mitigation sites.

#### A. Mitigation Standards



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Mitigation standards are a description of the extent to which mitigation will be applied in order to support achieving resource objectives (e.g., no net loss, net benefit). In land use plans, mitigation standards will be identified as one component of a land use plan's resource objectives for resources that are considered important, scarce, sensitive, or have a protective legal mandate, in order help to describe the desired resource conditions at all relevant scales. As appropriate and through application of the mitigation hierarchy, mitigation standards should seek to achieve a no net loss or net benefit outcome for such resources.

In developing the land use plan objective's mitigation standard, the BLM should include considerations such as legal, regulatory, or policy protections that limit or prevent certain types of impacts. The mitigation standard could apply throughout the planning area and/or in specific geographic sub-areas. When identified in a land use plan, the BLM will adhere to these or more protective mitigation standards for any applicable public land use, consistent with the law(s) under which BLM authorizes the land use.

*Example (net benefit): A land use plan's resource objective identifies a mitigation standard of "net benefit" for a scenic river's outstandingly remarkable values due to the National Wild and Scenic Rivers Act's "protect and enhance" legislative mandate. As a result, any reasonably foreseeable residual effects to the river's outstandingly remarkable values should be avoided and/or compensated to a level that would improve upon the baseline conditions of the scenic river's values.*

*Example (no net loss): A land use plan's resource objective identifies a mitigation standard of "no net loss" for critical mule deer winter habitat. As a result, any reasonably foreseeable residual effects to the habitat that should be avoided and/or compensated to a level that would result in no negative change to baseline conditions of critical mule deer winter habitat.*

When mitigation standards apply to a specific resource (i.e., rather than a specific geographic location) the BLM should take a landscape-scale approach to meeting the resource mitigation standard. This may involve siting compensatory mitigation measures outside of the planning area if that is where the compensatory mitigation will provide the maximum benefit to the impacted resource.

## **B. The Mitigation Hierarchy in Land Use Plans**

The BLM may use the land use plan to identify, analyze, and require mitigation well in advance of anticipated public land uses.

1. *Avoidance, Minimization, Rectification, and Reduction/Elimination over Time:* During the land use planning process, the BLM should identify land use allocations and management actions to avoid, minimize, rectify, and reduce/eliminate reasonably

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foreseeable impacts. For example, the BLM may avoid or exclude incompatible public land uses in certain geographic areas (e.g., to protect conservation areas within the landscape), concentrate impact public land uses in certain areas (e.g., a solar energy zone) or corridors (e.g., a rights-of-way corridor), or limit surface disturbance in certain habitats. The BLM may also identify leasing stipulations, typical best management practices, reclamation standards, etc. that would apply to relevant public land uses in the planning area.

*Example: To avoid reasonably foreseeable impacts to scarce winter wildlife habitat, the BLM may identify special oil and gas lease stipulations (e.g., timing limitations (temporal avoidance), no surface occupancy (spatial avoidance)).*

*Example: To minimize reasonably foreseeable impacts to scenic landscapes, the BLM may identify areas in the land use plan where more protective visual resource management classes (e.g., Class II) will apply and therefore special permit requirements will apply (e.g., visual best management practices).*

2. **Compensatory Mitigation:** During the land use planning process, the BLM should identify and consider the anticipated need for compensatory mitigation to address reasonably foreseeable impacts to resources (that are important, scarce, sensitive, or have legal, regulatory, or policy protections that limit or prevent certain types of impacts) from anticipated public land uses. This may include, for example, identifying required compensatory mitigation to address impacts to a specific resource or identifying the need to condition leases or permits with compensatory mitigation obligations.

*Example: To compensate for reasonably foreseeable residual effects to a species of milk-vetch on BLM California's list of special status plants, the BLM may identify the need for compensatory mitigation in oil and gas leasing stipulations in a land use plan, if a lease (and its eventual development) will impact that species.*

### C. Compensatory Mitigation Sites

During land use planning, the BLM should consider supporting and/or establishing compensatory mitigation sites on BLM-managed lands and identifying land use allocations and management actions that provide for the durability of those sites. Compensatory mitigation sites should be selected based on need and consider the foreseeable residual effects in the planning area that may warrant compensatory mitigation. Compensatory mitigation sites should also be selected to minimize conflicts with other available and conflicting public land uses (e.g., recreation, grazing, energy development).

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1. The establishment of a compensatory mitigation site on BLM-managed lands is not a land use planning designation. A compensatory mitigation site is a general geographic area that has been provided an enhanced degree of durability in the land use plan that is suitable for ensuring compensatory mitigation measures performed at the site remain durable. Compensatory mitigation sites may be located within formal designations, such as ACEC or units of the National Conservation Lands, or may be located within general geographic areas without a formal designation where incompatible uses are excluded or restricted.
2. Not all compensatory mitigation sites need to be established in a land use plan; rather, a land use plan is one tool to help enhance the durability of compensatory mitigation sites. Other tools exist to ensure the durability of compensatory mitigation sites (Appendix 1).
3. Compensatory mitigation sites on BLM-managed lands can be used to site compensatory mitigation measures associated with all four types of compensatory mitigation mechanisms.

**5.2. Mitigation Strategies and Land Use Planning**

If appropriate, when amending and/or revising a land use plan, the BLM may consider and incorporate relevant components of a mitigation strategy. Additionally, the agency may commit in a land use plan revision or amendment to developing a mitigation strategy subsequent to the land use plan revision or amendment (see Handbook Chapter 4.5 for a discussion of mitigation strategies and NEPA analysis). Details about mitigation strategies are included in Handbook Chapter 4.



## CHAPTER 6. MITIGATION IN NEPA ANALYSES FOR PUBLIC LAND USES

Through the NEPA analysis process, the BLM will, to the greatest extent possible, identify and consider the effectiveness of mitigation to address reasonably foreseeable impacts (both significant and non-significant) to resources (and their values, services, and/or functions) from proposed public land uses (BLM-proposed and externally proposed).<sup>10</sup> The BLM will identify any required mitigation in the decision document(s) associated with the NEPA analysis and include any required mitigation in the land use authorization(s).

Mitigation should not be an afterthought; mitigation should be considered early and throughout the NEPA analysis process (e.g., scoping, proposed action, alternatives, environmental effects). For example, for BLM-proposed public land uses, the BLM should incorporate appropriate mitigation into the proposed project's design as an integral component of the proposed action (i.e., project design features). Or, for externally proposed public land uses, the BLM should encourage applicants to propose appropriate mitigation for their public land use.

Proactively proposed mitigation, particularly best management practices, can lead to better resource outcomes and in some cases reduce the reasonably foreseeable impacts of a public land use to below "significance" (as defined by 40 CFR 1508.1) or other potentially relevant statutory or regulatory thresholds. In conducting its analysis through the NEPA process, the BLM should include other appropriate mitigation measures as part of any other reasonable alternatives. Mitigation measures included in the proposed action and/or any other reasonable alternatives should be evaluated through the analysis of environmental effects.

Where they exist and are relevant, mitigation strategies will be used to inform the NEPA analyses for applicable proposed public land uses.

### 6.1. Preliminary Application Review Meetings

At preliminary application review meetings for proposed public land uses, the BLM should discuss with potential land use authorization applicants any foreseeable and appropriate mitigation obligations, including existing mitigation obligations associated with the land use plan or previous NEPA analysis, pertinent aspects of the mitigation hierarchy (e.g., BMPs), any potential effectiveness monitoring for mitigation measures, and any existing and applicable mitigation strategies. The BLM should invite other potentially affected Federal agencies, Tribal, State and/or local governments to participate in pre-application meetings to ensure issues and concerns can be given full consideration early in the process.

### 6.2. Existing Mitigation Strategies

If there is a relevant mitigation strategy that addresses a newly proposed public land use, the BLM should analyze the relevant mitigation recommendations from that mitigation strategy in at least one alternative of the NEPA analysis associated with the proposed public land use. If the

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<sup>10</sup> For additional guidance on NEPA and mitigation, please refer to: Executive Office of the President, Council on Environmental Quality's *Appropriate Use of Mitigation and Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact* January 14, 2011.

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Strategy has been previously considered through the NEPA process, it is a best practice to tier to the earlier NEPA document, incorporating the relevant portions by reference. Any new or unique circumstances warranting updating or modification of the tiered mitigation should also be considered within the NEPA analysis for the newly proposed public land use.

**6.3. Existing Mitigation Agreements**

If there are existing mitigation-related agreements, such as a programmatic agreement with a State or Tribal Historic Preservation Officer, a programmatic Fish and Wildlife Service Habitat Conservation Plan, or an approved mitigation plan for a US Army Corps of Engineers permit, the BLM should consider the terms and conditions of these agreements that pertain to a proposed public land use through the NEPA process, as appropriate.

**6.4. Consultation, Conferencing, and Coordinating**

The BLM should consider through the NEPA process the mitigation obligations that may result from formal consultation or conferencing with other agencies or entities under statutes, such as the Endangered Species Act, the National Historic Preservation Act, the Clean Water Act, or the Clean Air Act, regulations, or policies. The BLM should also coordinate with other Federal agencies, Tribal, State and/or local governments that have resources at risk of reasonably foreseeable impacts from proposed public land uses.

**6.5. Connected Actions on Non-Federal Lands**

The BLM may need to identify and consider mitigation, through the NEPA process, that would address reasonably foreseeable impacts to resources from non-Federal land uses that are considered connected actions to a proposed public land use, depending on the specific details of the connected actions.

The BLM's authority to require mitigation, in a decision document and land use authorization, for impacts to resources from public land uses on non-Federal land also depends on the specific details of the connected actions and any such determination warrants consultation with the Office of the Solicitor.

Mitigation measures identified and considered by the BLM in the NEPA process for impacts to resources from a connected action on non-Federal managed lands may include mitigation measures that would be carried out by other Federal, Tribal, State, and/or local governments, and can serve to alert those entities of appropriate mitigation measures. In describing mitigation under the authority of another agency, the BLM must discuss in the NEPA analysis the probability of the other agency implementing the mitigation measures.

**6.6. Mitigation and Findings of No Significant Impact**

When preparing an Environmental Assessment (EA), mitigation (including compensation) can be implemented to reduce the reasonably foreseeable impacts of the proposed public land use below the threshold of significance, and thus, an Environmental Impact Statement (EIS) would

not be required. When mitigation is implemented in order to reach a FONSI, the BLM's decision document(s) must clearly identify the specific mitigation and monitoring commitments necessary to reduce the reasonably foreseeable impacts to such a level.

## **6.7. Addressing Mitigation through the NEPA Process**

To address mitigation needs for a proposed public land use (BLM-proposed or externally proposed), the BLM should include the following in the NEPA analysis:

### **A. Federal Register Notices (for EISs)**

When publishing Notices of Intent in the Federal Register, the BLM should seek comment on potential issues, impacts, and the possible need for mitigation. When publishing Notices of Availability in the Federal Register, the BLM should include a description, if applicable, of key mitigation measures included in the proposed action and/or other reasonable alternatives.

### **B. Scoping (for EISs)**

When conducting scoping for a proposed public land use (BLM-proposed or externally proposed), the BLM should solicit internal and external input to help identify potential impacts and recommend mitigation measures to address those impacts.

### **C. Purpose and Need**

The BLM's purpose and need statement should include identifying and analyzing appropriate mitigation to address impacts from the public land use.

### **D. Proposed Action**

In the description of the proposed action, the BLM should describe or reference and summarize the mitigation measures (e.g., best management practices) included in the proposed action (which are also known as ameliorative design elements or design features<sup>11</sup> or applicant committed mitigation measures). If compensatory mitigation is proposed, the additional level of detail described in Handbook Chapter 6.6.F should be included. In this description, the BLM should reference and discuss applicable mitigation standards.

### **E. Other Reasonable Alternatives**

For the other reasonable alternatives, if any, the BLM should include and describe appropriate mitigation, including any compensatory mitigation being considered (Handbook Chapter 6.6.F), as an integrated and detailed part of the description of the alternative. To do so may require refinement of the alternative following the

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<sup>11</sup> BLM National Environmental Policy Act Handbook (H-1790-1).



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completion of the impact analysis (Handbook Chapter 6.6.G). In this description, the BLM should reference and discuss applicable mitigation standards.

If a mitigation standard does not yet exist for a resource that is considered important, scarce, sensitive, or has a protective legal mandate, the BLM should identify and consider appropriate mitigation standards for that resource (e.g., no net loss, net benefit) in alternatives in the NEPA analysis.

## **F. Compensatory Mitigation in Proposed Action and Reasonable Alternatives**

For compensatory mitigation measures analyzed in the proposed action and/or other reasonable alternatives, the BLM should:

1. Describe the potential type of and amount of compensatory mitigation that is appropriate for mitigating the reasonably foreseeable residual effects that warrant compensatory mitigation, including description of the compensatory mitigation's relationship to applicable mitigation standards for the impacted resources.
2. Describe the compensatory mitigation measures, sites, and mechanisms necessary for meeting the compensatory mitigation obligation, including durability, monitoring, adaptive management, and reporting requirements (Handbook Chapters: 3.5.E, 3.5.H, 3.5.I, 2.1.D, 2.1.F, and 2.1.H).

In most cases, the analysis should specifically address, in an appropriate level of detail, the compensatory mitigation measures, sites, and mechanisms. However, in some cases, it may be infeasible to identify specific mitigation details at the time of the NEPA analysis (e.g., exact projects will be determined in partnership with a mitigation fund in a post-ROD process) or illegal or otherwise unacceptable to release this information (e.g., under government-to-government consultation). In these cases, it is important to specify the anticipated compensatory mitigation measures and to describe why more specific information cannot be disclosed.

## **G. Environmental Consequences**

In the Environmental Consequences section, the BLM should:

1. Describe how any of the first four aspects of the mitigation hierarchy (avoidance, minimization, rectification, and reduction or elimination of the impacts) included in the proposed action and/or other reasonable alternatives will be applied to address the reasonably foreseeable impacts from the proposed public land use, at all relevant scales, and support conformance with applicable mitigation standards (e.g., how avoidance of a specific resource will result in no impacts to that resource). If mitigation is not included for some impacts (e.g., those impacts are acceptable), the BLM will provide rationale for this determination in the analysis.

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2. Describe the reasonably foreseeable residual effects that will remain, if any, after application of any aspects of the first four aspects of the mitigation hierarchy included in the proposed action and /or other reasonable alternatives.
3. If compensatory mitigation is included in the proposed action or a reasonable alternative, describe how the compensatory mitigation measures will appropriately mitigate the reasonably foreseeable residual effects that warrant compensatory mitigation, at all relevant scales, and support conformance with applicable mitigation standards. If compensatory mitigation is not included for some residual effects (e.g., those residual effects are acceptable), the BLM will provide rationale for this determination in the analysis.
4. Describe any remaining residual effects not addressed (or not addressed entirely) by compensatory mitigation.
5. Any reasonably foreseeable impacts associated with the mitigation measures must also be included in this analysis.

**H. Decision Document**

In the decision document(s) for a public land use, the BLM may approve, deny, or approve with additional mitigation the proposed public land use (BLM-proposed or externally proposed).

1. If approving the proposed public land use (with or without modifications), clearly identify in the decision document(s) the required mitigation measures (i.e., the mitigation obligation) with rationale from and reference to the associated NEPA analysis. Additionally, present any applicable mitigation monitoring (Handbook Chapter 2.1.F) and enforcement program (Handbook Chapter 7.3) for the selected alternative.

For externally proposed public land uses (e.g., a rights-of-way application), the BLM must incorporate any mitigation obligations from the decision document(s) into the land use authorization (e.g., lease, grant, permit, etc.) via stipulations, terms and conditions, conditions of approval, etc., so that they become requirements of the land use authorization (Handbook Chapter 7).

2. If denying the proposed public land use, provide an explanation for the denial (Handbook Chapter 2.5.B). For externally proposed public land uses, include appropriate appeal rights for the land use authorization's applicant to appeal a denial to the BLM's State Director, the Interior Board of Land Appeals, or directly to Federal district court, depending on the circumstances and as provided in applicable regulations.

## **CHAPTER 7. MITIGATION IN LAND USE AUTHORIZATIONS**

For externally proposed public land uses (e.g., a rights-of-way application), the BLM will incorporate any mitigation obligations from the decision document(s) into the land use authorization(s) (e.g., lease, grant, permit, etc.) via stipulations, terms and conditions, conditions of approval, etc., so that they become requirements of the land use authorization. Any mitigation obligations incorporated into the land use authorization must be supported by the NEPA analysis (Handbook Chapter 6).

### **7.1. Mitigation in Land Use Authorizations**

The land use authorization will include each mitigation measure and the mitigation measures' required outcome (Handbook Chapter 2.1.E). The authorization should also include any compensatory mitigation measures' performance standards and responsible parties. The BLM will also include a description of any durability, monitoring, adaptive management, and reporting requirements. It may be useful to develop a table to communicate this information if there are numerous mitigation measures.

### **7.2. Financial Assurances**

To guarantee the implementation and effectiveness of the mitigation obligations, the BLM may require financial assurances, consistent with applicable law. The BLM should consult with the Office of the Solicitor to determine if the BLM has regulatory authority to require financial assurances for mitigation obligations; if so, the Office of the Solicitor should also be consulted to determine the appropriate type and amount of financial assurances.

### **7.3. Enforcing Mitigation Obligations**

The BLM is responsible for enforcing the mitigation obligations identified in the land use authorization, consistent with applicable law and only as provided for in applicable regulations.

- A. Implementation/Compliance Enforcement.** If the public land user fails to comply, in whole or in part, with mitigation obligations in accordance with the land use authorization, the BLM may, consistent with applicable law and as provided for in applicable regulations, suspend or terminate the authorization or the holder may forfeit or relinquish the authorization. If operations have already begun, but mitigation has not been undertaken in accordance with the authorization, the BLM may initiate an appropriate enforcement action, consistent with applicable law and as provided for in applicable regulations, such as an Incident of Noncompliance, Notice of Noncompliance, Noncompliance Order, or a Stop Order, giving the public land user a specific period of time to come into compliance, consistent with applicable law and as provided for in applicable regulations. In some programs, the BLM may have authority to pursue penalties for violations. The BLM may also draw upon the performance bond or another financial instrument, if one was required or exists (Handbook Chapter 7.2).



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- B. Effectiveness Enforcement.** If mitigation measures are failing, as determined by effectiveness monitoring, the BLM will work with the responsible party to identify appropriate actions for achieving the required mitigation outcomes and for complying with the terms and conditions of applicable land use authorizations. The BLM will take appropriate follow-up actions, including enforcement actions, consistent with applicable law and as provided for in applicable regulations, as necessary, if the mitigation measures were not implemented as designed or if the mitigation measures have not been effective in achieving the required mitigation outcomes, based on effectiveness monitoring, unless the outcome is not achieved due to a force majeure event.

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**GLOSSARY****-A-**

*Adaptive management.* A system of management practices based on clearly identified outcomes and monitoring to determine whether management actions are meeting required outcomes; and, if not, facilitating management changes that will best ensure that outcomes are met or re-evaluated. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain.

*Additionality.* A compensatory mitigation measure that is demonstrably new and would not have occurred without the compensatory mitigation measure.

*Advance compensatory mitigation measures.* Compensatory mitigation measures that achieve their defined outcome(s) in advance of impacts from a public land use.

*Appropriate.* Necessary for and effective at achieving the outcome and consistent with applicable law.

*Avoidance.* Avoiding the impact altogether by not taking a certain action or parts of an action (40 CFR 1508.1).

**-B-**

*Baseline.* The pre-existing condition of a resource, at all relevant scales, which can be quantified by an appropriate metric(s). During environmental reviews, the baseline is considered the affected environment that exists absent the project's implementation, and is used to compare predictions of the effects of the proposed action or a reasonable range of alternatives.

*Best management practices (BMPs).* State-of-the-art, efficient, appropriate, and practicable mitigation measures for avoiding, minimizing, rectifying, and reducing or eliminating impacts over time.

*BLM-proposed public land uses.* Public land uses proposed by the BLM to further its land management responsibilities under FLPMA (e.g., stewardship and timber sale contracts, development of facilities at Special Recreation Management Areas, land treatments).

*Broad-scale monitoring.* Monitoring conducted across the geographic extent (e.g., an ecoregion) of the focal resources, at a coarse resolution.

**-C-**

*Characteristics.* The specific attributes of a resource that may be particularly unique, important, or essential for maintaining that resource (e.g., a specific habitat type or portion of a landscape that is essential to survival during a specific season of the year, or limiting in the lifecycle of the species, or essential for migration).

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*Commensurate.* A compensatory mitigation obligation that is reasonably related and proportional to the reasonably foreseeable residual effects from a public land use that warrants compensatory mitigation.

*Compensatory mitigation.* Compensating for the remaining impacts after all appropriate and practicable avoidance and minimization measures have been applied, by replacing or providing substitute resources or environments through the restoration, establishment, enhancement, or preservation of resources and their values, services and functions (40 CFR 1508.1).

*Compensatory mitigation measure.* An action that results in the restoration, establishment, enhancement, and/or preservation of resources in order to address a residual effect to a resource from a public land use that warrants compensatory mitigation.

*Compensatory mitigation mechanism.* A type of an arrangement where resources are restored, established, enhanced, and/or preserved (all of which may lead to accrual of credits) for the purpose of compensating for residual effects to resources from public land uses that warrant mitigation (which qualify as accrual of debits), and may include mitigation banks, mitigation exchanges, mitigation funds (also known as in-lieu fee programs), and public land user-responsible compensatory mitigation measures.

*Compensatory mitigation site.* The areas where compensatory mitigation measures are located.

*Credit.* A unit of measurement representing the restoration, establishment, enhancement, and/or preservation of resources by a compensatory mitigation measure.

-D-

*Debit.* A unit of measurement representing an impact from a public land use.

*Decision document.* A formal agency decision, such as a Decision Record or Record of Decision associated with a NEPA document, or other program-specific decision documentation.

*Durability.* The maintenance of the effectiveness of a mitigation measure and/or a compensatory mitigation site for the duration of the impacts from the associated public land use, including resource, administrative, and financial considerations.

*Duration of the impact.* The time that resource impacts (both direct and indirect effects) from a public land use persist, even if this time period extends beyond the expiration of the public land use. The duration of some impacts may be in perpetuity.

-E-

*Effectiveness monitoring.* Verifying that mitigation is achieving the required outcomes.



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*Effects.* The adverse direct, indirect, and cumulative impacts from a public land use; effects and impacts as used in this policy are synonymous.

*Enhancement.* An increase or improvement in quality, value, or extent.

*Establishment.* Introduction or re-introduction of a resource at a site.

*Externally proposed public land uses.* Public land uses proposed by a member of the public to the BLM for approval (via grants, leases, permits, licenses, and similar authorizations) and if authorized by the BLM would allow the public land user (i.e., a project applicant) to occupy, use, develop, or traverse BLM-managed surface or mineral estate.

-F-

*Fine-scale monitoring.* Monitoring conducted across the geographic extent of a mitigation measure and/or a compensatory mitigation site.

*Force majeure.* An event that cannot be reasonably anticipated or controlled, such as natural disasters outside of a predicted range of disturbance, etc.

-I-

*Impacts.* The adverse direct, indirect, and cumulative effects from a public land use; effects and impacts as used in this policy are synonymous.

*Important.* Resources that the BLM has determined to warrant special consideration, consistent with applicable law.

*Irreplaceable resources.* Those resources recognized through existing legal authorities as requiring particular protection from impacts and that because of their high value or function and unique character, cannot be restored or replaced.

-L-

*Land use authorizations.* A BLM approval for a public land use, which was proposed by a member of the public.

*Landscape.* A geographic area encompassing an interacting mosaic of ecosystems and human systems that is characterized by a set of common management concerns. The landscape is not defined by the size of the area, but rather by the interacting elements that are relevant and meaningful in a management context. The term “landscape” may include water-centric scales, such as watersheds, if they represent the appropriate landscape-scale.

-M-

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*Mid-scale monitoring.* Similar to broad-scale monitoring, but conducted across a smaller geographic extent (e.g., a watershed) at a finer resolution.

*Minimization.* Minimizing impacts by limiting the degree or magnitude of the action and its implementation (40 CFR 1508.1).

*Mitigation.* Includes, avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and, compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.1).

*Mitigation bank.* An arrangement where actions to restore, establish, enhance, and/or preserve resources (all of which may lead to accrual of credits) are conducted in a defined geographic area(s) for the purpose of eventually compensating for residual effects to resources from public land uses (which qualify as accrual of debits). In general, a mitigation bank's responsible party sells compensatory mitigation credits to public land users, whose obligation to provide compensatory mitigation is then transferred to the mitigation bank's responsible party.

*Mitigation exchanges.* An arrangement where actions to restore, establish, enhance, and/or preserve resources (all of which may lead to accrual of credits) are conducted in a defined geographic area, by several willing and applicable landowners acting independently, for the purpose of eventually compensating for residual effects to resources from public land uses (which qualify as accrual of debits). In general, a mitigation exchange's responsible party facilitates the sales of compensatory mitigation credits from those landowners who accrued the credits to public land users, whose obligation to provide compensatory mitigation is then transferred to the mitigation exchange's responsible party.

*Mitigation fund (i.e., an in-lieu fee fund).* An arrangement where actions to restore, establish, enhance, and/or preserve resources (all of which may lead to accrual of credits) are conducted in a defined geographic area, by pooling and spending monetary funds from a single or multiple public land users, for the purpose of compensating for residual effects to resources from public land uses (which qualify as accrual of debits). In general, a mitigation fund's responsible party accepts funds for compensatory mitigation from public land users, whose obligation to provide compensatory mitigation is then transferred to the mitigation fund's responsible party.

*Mitigation hierarchy.* The process and order for identifying, considering, and, as appropriate, requiring mitigation, generally by first avoiding impacts, then minimizing, rectifying, and reducing or eliminating impacts over time, and then compensating for some or all of the remaining impacts (i.e., residual effects).

*Mitigation obligation.* The types of and amount of mitigation required by the BLM to mitigate reasonably foreseeable impacts to resources from a public land use.

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*Mitigation standard.* A description of the extent to which mitigation will be applied in order to support achieving resource objectives (e.g., no net loss, net benefit). Mitigation standards may be identified in law, land use plans, and other decision documents supported by appropriate NEPA analysis.

*Mitigation strategy.* A document that identifies, evaluates, and communicates potential mitigation needs and mitigation measures in a geographic area, at relevant scales, well in advance of anticipated public land uses.

*Multiple use.* The management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output. (FLPMA § 103 (c), 43 USC 1702(c)).

-N-

*National Conservation Lands.* A subset of BLM-managed lands that includes Wilderness Areas, Wilderness Study Areas, National Monuments, National Conservation Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, and other similar conservation designations; also known as the National Landscape Conservation System (P. L. 111-11 § 2002).

*NEPA process/analysis.* Analysis prepared pursuant to the National Environmental Policy Act, such as a planning- or project-level environmental assessment (EA) or environmental impact statement (EIS).

*Net benefit.* When mitigation results in an improvement above baseline conditions.

*No net loss.* When mitigation results in no negative change to baseline conditions (e.g., fully offset or balanced).

-O-

*Objective.* A description of a desired outcome for a resource.

*Outcome.* A clearly defined and measurable result that reflects the desired condition of a resource.



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*Output.* The type and/or amount of actions or work to benefit a resource.

-P-

*Performance standard.* Observable or measurable metrics that are used to determine if outcomes are met, and often include defined timeframes.

*Practicable:.* Available and capable of being done after taking into consideration existing technology, logistics, and cost in light of a mitigation measure's beneficial value and the overall purpose, scope, and scale of a public land use.

*Preservation.* The removal of a threat to, or preventing the decline of, resources. Preservation may include the application of new protective designations on previously unprotected land or the relinquishment or restraint of a lawful use that adversely impacts resources.

*Public land.* Any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except (1) lands located on the Outer Continental Shelf; and (2) lands held for the benefit of Indians, Aleuts, and Eskimos. (FLPMA § 103 (e), 43 USC 1702(e)).

*Public land use.* The occupancy, use, development, or traversing of BLM-managed surface or mineral estate; may be BLM-proposed or externally proposed.

*Public land user.* A person who has an approved land use authorization.

*Public land user-responsible compensatory mitigation measures.* Actions to restore, establish, enhance, and/or preserve resources (all of which may lead to accrual of credits) by a public land user for the purpose of compensating for residual effects to resources from their public land uses (which qualify as accrual of debits); also referred to as permittee-responsible compensatory mitigation.

-R-

*Reasonably related.* To be demonstrably and rationally linked in terms of resource quantity, quality, and characteristics, as guided by the best available science.

*Rectification.* Rectifying the impact by repairing, rehabilitating, or restoring the affected environment (40 CFR 1508.1).

*Reduction or elimination over time.* Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the public land use (modified from 40 CFR 1508.1).

*Relevant scales.* The geographic area of interest for a resource or a land use, which may include areas as narrow as the site or as broad as a landscape.

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*Residual effects.* Any adverse reasonably foreseeable effects that are expected to remain after consideration and application of the first four aspects in the mitigation hierarchy; also referred to as unavoidable impacts. Residual effects include those adverse impacts that will persist until the outcome of a mitigation measure is achieved at some point in the future.

*Resources.* See Resources (and their values, services, and/or functions).

*Resources (and their values, services, and/or functions).* Resources are natural, social, or cultural objects or qualities; resource values are the importance, worth, or usefulness of resources; resource services are the benefits people derive from resources; and resource functions are the physical, chemical, and/or biological processes that involve resources. (For the purposes of this policy, “resources” generally exclude leasable, salable, and locatable minerals.) For brevity, in this policy, the term “resources (and their values, services, and/or functions)” is also referred to in this handbook simply as “resources.”

*Responsible party.* The entity accountable for fulfilling all aspects of mitigation obligations, including, but not limited to, ensuring the durability and effectiveness of mitigation measures, achieving mitigation measures’ outcomes, and complying with monitoring, adaptive management, and reporting requirements. The responsible party may be the public land user, the BLM, a third party, or a combination.

*Restoration.* The process of assisting the recovery of a resource (including its values, services, and/or functions) that has been degraded, damaged, or destroyed to the condition that would have existed if the resource had not been degraded, damaged, or destroyed.

*Reversal.* The loss of durability or effectiveness of a mitigation measure and/or a compensatory mitigation site.

-S-

*Scarce.* Resources that are not plentiful or abundant, and may include resources that are experiencing a downward trend in condition.

*Sensitive.* Resources that are delicate and vulnerable to adverse change, such as resources that lack resilience to changing circumstances.

*Sustained yield.* The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use (FLPMA § 103 (h), 43 USC 1702(h)).

-T-

*Timeliness.* The lack of a time lag between the impact to the resources and the achievement of the outcomes of the associated mitigation measures.

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*Written agreement.* A legal document signed by an authorized officer of the BLM and any other applicable parties that outlines the terms and conditions of an arrangement between parties.



**APPENDIX 1. TOOLS FOR ENSURING THE DURABILITY OF COMPENSATORY MITIGATION SITES**

Durability is the maintenance of the effectiveness of a mitigation measure and/or a compensatory mitigation site for the duration of the impacts from public lands uses (BLM-proposed and externally proposed), including resource, administrative, and financial considerations. Tools to enhance site durability, where it does not already exist, will vary depending on the particular characteristics of a compensatory mitigation site (e.g., land ownership, current management prescriptions).

- A. *BLM-Managed Lands*: On BLM-managed lands the most durable compensatory mitigation sites for conducting compensatory mitigation measures are those sites in the National Conservation Lands due to these lands' protected status in law. On other BLM-managed lands, the BLM may be able to offer a degree of durability that may be short of the near full durability provided by lands in the National Conservation Lands.

For compensatory mitigation sites on BLM-managed land, appropriate actions should be taken to ensure that those sites are durable. Some durability actions may include one or a combination of the following:

1. Secretarial withdrawals under the authority of FLPMA § 204 (43 USC 1714) to curtail or limit the operation of some or all of the public land laws (such as a withdrawal from mineral entry under the mining laws) at the site.

The voluntary relinquishment of a mining claim by a mining claimant, or a voluntary agreement from a mining claimant to cease operations or not start operations, could provide additional durability to the site for the duration of the Secretarial withdrawal.

2. The lease or conveyance of public land, under the authority of the Recreation and Public Purposes Act (43 USC 869 et seq.), to a Federal, state, or local government, or non-profit organization, for a public purpose that provides for the durability of the site.
3. Identification of a protective land use plan allocation for the site, including land use restrictions that provide, consistent with applicable law, for the durability of the site (via the authority granted in FLPMA § 202; e.g., exclusion area; no surface occupancy; limitations on the amount of disturbance; established protection measures, such as required Best Management Practices; Area of Critical Environmental Concern; Research Natural Areas).

The use of land use planning to provide a layer of durability is encouraged; however, it is important to recognize that future land use plan amendments (e.g., project-level land use plan amendments) and/or revisions to the land use plan have the potential to change the durability of compensatory mitigation sites.

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4. The issuance of a land use authorization (e.g., leases or easements) to a member of the public for purposes of conservation for the site (via the authority granted in FLPMA Title III and/or Title V).
5. The modification or relinquishment of an existing lease, with the consent of the lessee, to remove this (potential) incompatible uses from the site for the duration of the impact.

*Example (layering of durability tools): To provide for the durability of compensatory mitigation sites associated with residual effects from oil and gas wells and related infrastructure on BLM-managed lands, in an area with a valid existing oil and gas lease, the lessee agrees to a modification or relinquishment of the lease within the compensatory mitigation site. Additionally, the BLM amends its land use plan to exclude other incompatible uses in the area of the compensatory mitigation site (e.g., oil and gas leasing, transmission line rights-of-way, off-road vehicle use, closing the compensatory mitigation site to disposal), and the Secretary withdraws the compensatory mitigation site from mineral entry. The lease modification or relinquishment will reduce or prevent surface disturbance allowable under the lease, the land use plan amendment will restrict the most conflicting public land uses, and the withdrawal will prevent location and entry under the United States mining laws, subject to valid existing rights, and from applications and offers under the mineral leasing law. Together, these three actions ensure the durability of the compensatory mitigation site.*

- B. Private Lands:** For compensatory mitigation sites on private lands, durability tools may include legal conservation easements, other deed restrictions, habitat management agreements, etc. and may only be implemented with the consent of the landowner.

**APPENDIX 2. THE BLM'S MANAGEMENT OF COMPENSATORY MITIGATION FUNDS**

Subject to the requirements described below, the BLM may accept an offer of monies from a public land user to fund specific compensatory mitigation measures, either on or off BLM-managed lands. The BLM may also accept an offer of monies from individual, public land users and may pool those funds towards completion of larger, collective compensatory mitigation measures. This is especially efficient for compensating for the residual effects to similar resources from multiple public land uses, when it is not feasible or efficient to require individual, public land users to manage their own compensatory mitigation measures or sites.

The BLM may use monetary contributions for implementing compensatory mitigation measures and the management of compensatory mitigation sites, including the associated administrative costs, durability, monitoring, adaptive management, and reporting. In order to qualify, the funds collected should be identified for specific types of compensatory mitigation measures (e.g., habitat restoration for a species that would be impacted by the public land use). The decision document should be as specific as possible regarding what types of compensatory mitigation measures will be funded in order to address the residual effects that were determined to warrant compensatory mitigation.

The BLM's process for accepting and managing mitigation contributions is as follows:

- A. *On BLM-Managed Lands:*** BLM's authority to accept an offer of monies for specific compensatory mitigation measures at compensatory mitigation sites on BLM-managed lands comes from:
  - 1. FLPMA Section 307(b), which provides the authority to enter into contracts and cooperative agreements, and FLPMA Section 307(c), which provides the authority to accept contributions or donations of money for management and protection of the public lands.
  - 2. The Wyden Amendment, 16 U.S.C. 1011, which provides the authority to expend contributed funds on activities limited to those involving the protection, restoration, and enhancement of fish and wildlife habitat and other resources or for the reduction of risk of natural disaster where public safety is threatened that also benefit resources on public lands within the watershed.
- B. *On non-BLM-Managed Lands:*** Before accepting money intended for expenditure on non-BLM lands (including other Federal, Tribal, State, or private lands, with the consent of the landowner), BLM managers should consult with the Solicitor's Office and the National Operations Center to confirm that they have sufficient authority to accept and expend funds in the proposed manner. The BLM's authority to accept an offer of monies to fund BLM's performance of specific compensatory measures at compensatory mitigation sites on non-BLM-managed lands comes from the Wyden Amendment (16 U.S.C. 1011), which provides the authority to expend contributed funds on activities limited to those involving the protection, restoration, and enhancement of fish and



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wildlife habitat and other resources or for the reduction of risk of natural disaster where public safety is threatened that also benefit resources on public lands within the watershed.

**C.** For the BLM to accept compensatory mitigation funds, a written agreement must exist between the BLM and the entity contributing the funds (e.g., the public land user). This agreement should be consistent with applicable law and describe the:

1. Authorities to enter into the agreement.
2. Amount of funding that the BLM is accepting.
3. Resource outcomes that will be achieved with the funds.
4. Specific types of compensatory mitigation measure(s) that may be undertaken with the funds, including a discussion of how durability will be ensured.
5. Timelines for expending the funds to implement the compensatory mitigation measure(s).
6. Adequacy of funds for the specific compensatory mitigation measures(s), including a discussion of how additionality will be ensured.
7. Project codes for tracking accepted and expended funds (especially in the case of multiple contributors).
8. Administrative fees.
9. Disposition or refund of excess funds, if any.
10. Reporting requirements.
11. Rules and requirements for agency cooperators.
12. Assent of all parties, including the applicable BLM State Director.

Additional written agreements may be necessary to expend the compensatory mitigation funds, such as with the landowner(s) where the compensatory mitigation measure will occur (if not on BLM-managed lands) or with an applicable regulatory agency (e.g., US Fish and Wildlife Service, State agencies).

**D.** The BLM must carefully and transparently manage compensatory mitigation funds by:

1. Properly recording the acceptance of funds for compensatory mitigation measures on Form 4120-9 (“Proffer of Monetary Contributions”) and depositing the funds into the

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appropriate 7100 account (usually 7122) for expending on the compensatory mitigation measure.

2. Assigning specific project codes to the compensatory mitigation fund accounts to track the contributions and subsequent expenditures.



[4210-01-M]

[Docket No. FI-4184]

**PART 1917—APPEALS FROM FLOOD ELEVATION DETERMINATION AND JUDICIAL REVIEW****Final Flood Elevation Determination for the Town of Norton, Bristol County, Mass.**

AGENCY: Federal Insurance Administration, HUD.

ACTION: Final rule.

SUMMARY: Final base (100-year) flood elevations are listed below for selected locations in the Town of Norton, Bristol County, Massachusetts. These base (100-year) flood elevations are the basis for the flood plain management measures that the community is required to either adopt or show evidence of being already in effect in order to qualify or remain qualified for participation in the national flood insurance program (NFIP).

EFFECTIVE DATE: The date of issuance of the flood insurance rate map (FIRM), showing base (100-year) flood elevations, for the Town of Norton, Bristol County, Massachusetts.

ADDRESS: Maps and other information showing the detailed outlines of the flood-prone areas and the final elevations for the Town of Norton are available for review at the Town Offices, Norton, Massachusetts.

**FOR FURTHER INFORMATION CONTACT:**

Mr. Richard Krimm, Assistant Administrator, Office of Flood Insurance, Room 5270, 451 Seventh Street SW., Washington, D.C. 20410, 202-755-5581 or toll-free line 800-424-8872.

SUPPLEMENTARY INFORMATION: The Federal Insurance Administrator gives notice of the final determinations of flood elevations for Town of Norton, Bristol County, Massachusetts.

This final rule is issued in accordance with section 110 of the Flood Disaster Protection Act of 1973 (Pub. L. 93-234), 87 Stat. 980, which added section 1363 to the National Flood Insurance Act of 1968 (Title XIII of the Housing and Urban Development Act of 1968 (Pub. L. 90-448), 42 U.S.C. 4001-4128, and 24 CFR 1917.4(a)). An opportunity for the community or individuals to appeal this determination to or through the community for a period of ninety (90) days has been

provided. No appeals of the proposed base flood elevations were received from the community or from individuals within the community.

The Administrator has developed criteria for flood plain management in flood-prone areas in accordance with 24 CFR Part 1910.

The final base (100-year) flood elevations for selected locations are:

Source of flooding	Location	Elevation in feet, national geodetic vertical datum
Wading River.....	At Confluence with Rumford River.	61
	350 feet Upstream of Route 140.	68
	1200 feet Upstream of Route 140.	70
	3850 feet Upstream of Route 140.	72
	3350 feet Downstream of Barrows Street.	82
	Just Upstream of Barrows Street.	86
	Just Upstream of Dam No. 1 (650 feet Upstream of Barrows Street).	92
	2200 feet Downstream of West Main Street.	93
	Just Upstream of West Main Street.	97
	Just Upstream of Walker Street.	104
	2100 feet Downstream of Richardson Street.	105
Rumford River.....	Just Upstream of Richardson Street.	110
	2900 feet Upstream of Confluence with Wading River.	63
	2250 feet Downstream of Pine Street.	67
	Just Upstream of Pine Street.	73
	Just Upstream of Route 123.	74
	Just Upstream of Cross Street.	84
	Just Upstream of Dam (250 feet Upstream of Cross Street).	89
	Downstream of Reservoir Avenue.	93
	900 feet Upstream of Winnecunnet Pond.	67
	At Plain Street.....	69
	3500 feet Upstream of Plain Street.	70
Canoe River.....	Just Upstream of Route 123.	77
	3000 feet Upstream of Route 123.	83
	7500 feet Upstream of Route 123.	85

(National Flood Insurance Act of 1968 (Title XIII of Housing and Urban Development Act of 1968), effective January 28, 1969 (33 FR 17804, November 28, 1968), as amended (42 U.S.C. 4001-4128); and Secretary's delegation of authority to Federal Insurance Administrator, 43 FR 7719)

In accordance with Section 7(a)(4) of the Department of HUD Act, Section 324 of the Housing and Community Amendments of 1978, Pub. L. 95-557, 92 Stat. 2080, this rule has been granted waiver of Congressional review requirements in order to permit it to take effect on the date indicated.

Issued: August 9, 1978.

GLORIA M. JIMENEZ,  
Federal Insurance Administrator.  
[FR Doc. 79-50 Filed 1-2-79; 8:45 am]

[4830-01-M]

**Title 26—Internal Revenue****CHAPTER 1—INTERNAL REVENUE SERVICE, DEPARTMENT OF THE TREASURY****SUBCHAPTER A—INCOME TAX**

[T.D. 7582]

**PART 1—INCOME TAX; TAXABLE YEARS BEGINNING AFTER DECEMBER 31, 1953****Exemption From Withholding for Certain Commissions Paid to Nonresident Aliens**

AGENCY: Internal Revenue Service, Treasury.

ACTION: Final regulations.

SUMMARY: This document contains a final regulation relating to the exemption from withholding of certain compensation paid to nonresident aliens. This regulation adds an additional exemption from withholding and provides persons required to withhold on compensation of nonresident aliens with needed guidance to comply with the law.

DATE: This regulation is effective January 3, 1979.

**FOR FURTHER INFORMATION CONTACT:**

Diane L. Renfro of the Legislation and Regulations Division, Office of the Chief Counsel, Internal Revenue Service, 1111 Constitution Avenue, N.W., Washington, D.C. 20224, Attention: CC:LR:T, 202-566-3289, not a toll-free call.

**SUPPLEMENTARY INFORMATION:****BACKGROUND**

This document contains a final regulation under section 1441 (c)(4) of the Internal Revenue Code of 1954 relating to the exemption from withholding of certain commissions paid to nonresident aliens.

**COMMISSIONS PAID BY SHIP SUPPLIERS TO CERTAIN NONRESIDENT ALIENS EXEMPT FROM WITHHOLDING**

This regulation provides that commissions or rebates paid by ship suppliers to nonresident aliens employed by nonresident alien individuals, foreign partnerships, or foreign corporations in the operation of ships of foreign registry for purchasing supplies



from these suppliers will not be subject to the withholding requirements of section 1441(a).

#### RATIONALE FOR EXEMPTION

The practice of paying commissions or rebates to foreign ship captains for purchasing supplies from a particular supplier is widespread. The Service's position with respect to these commissions as expressed in Rev. Rul. 58-479, 1958-2 C.B. 60 is that they are subject to withholding under section 1441(a).

On June 28, 1978, H.R. 13336 was introduced to amend section 1441(c) of the Internal Revenue Code to exempt ship suppliers from the withholding requirements of section 1441(a). Treasury supported the objectives of this amendment because in many instances the amount of U.S. source income involved as a result of these payments is so small that the ship captains have little or no final U.S. tax liability. Since section 1441(c)(4) gives the Secretary a broad grant of authority to promulgate regulations exempting compensation of aliens from withholding, this exemption is being made under the regulations.

#### DRAFTING INFORMATION

The principal author of this regulation is Diane L. Renfro of the Legislation and Regulations Division of the Office of Chief Counsel, Internal Revenue Service. However, personnel from other offices of the Internal Revenue Service and Treasury Department participated in developing the regulation, both on matters of substance and style.

#### ADOPTION OF AMENDMENTS TO THE REGULATIONS

Accordingly, 26 CFR Part 1 is amended as follows:

Paragraph (b)(1) of § 1.1441-4 is amended by adding a new subdivision (v) to read as follows:

§ 1.1441-4 Exemptions from withholding.

(b) Compensation for personal services of an individual—(1) Exemption from withholding. \* \* \*

(v) Such compensation is paid after January 3, 1979 as a commission or rebate paid by a ship supplier to a nonresident alien individual, who is employed by a nonresident alien individual, foreign partnership, or foreign corporation in the operation of a ship or ships of foreign registry, for placing orders for supplies to be used in the operation of such ship or ships with the supplier. See section 162(c) and the regulations thereunder for denial

of deduction for illegal bribes, kickbacks, and other payments.

In accordance with 5 U.S.C. 553(b)(B) the Commissioner has determined that there is an immediate need to eliminate the economic disadvantage which U.S. ship suppliers are subjected by virtue of requiring withholding on these commissions. For this reason notice and public procedure would be contrary to the public interest. In addition the total U.S. tax liability of foreign ship masters on these commissions is so small that notice and public procedure would be unnecessary. Furthermore, this regulation is being published in final form effective immediately in compliance with 5 U.S.C. 553(d)(1) which excepts a substantive rule which grants or recognizes an exemption from the requirement of publication 30 days before its effective date.

This Treasury decision is issued under the authority contained in section 7805 of the Internal Revenue Code of 1954 (68 A Stat. 917; 26 U.S.C. 7805).

JEROME KURTZ,  
Commissioner of Internal Revenue.

Approved: December 18, 1978.

DONALD C. LUBICK,  
Assistant Secretary  
of the Treasury.

FR Doc. 79-193 Filed 1-2-79; 8:45 am

[4830-01-M]

[T.D. 7583]

#### PART 5—TEMPORARY INCOME TAX REGULATIONS UNDER THE REVENUE ACT OF 1978

##### Taxable Years of Members of Controlled Groups of Corporations That Include December 31, 1978

AGENCY: Internal Revenue Service, Treasury.

ACTION: Temporary regulation.

SUMMARY: This document provides a temporary regulation for component members of controlled groups of corporations. Changes to the applicable tax law were made by the Revenue Act of 1978. This regulation will affect component members of controlled groups of corporations and will provide them with the guidance needed to comply with the law.

DATE: The regulation applies to taxable years that include December 31, 1978.

FOR FURTHER INFORMATION CONTACT:

Charles M. Whedbee of the Legislation and Regulations Division, Office of the Chief Counsel, Internal Revenue Service, 1111 Constitution Avenue, N.W., Washington, D.C. 20224, Attention: CC:LR:T (202-566-3463, not a toll-free number).

#### SUPPLEMENTARY INFORMATION:

##### BACKGROUND

This document contains a temporary regulation relating to component members of controlled groups of corporations for taxable years that include December 31, 1978. Further, this document adds a new Part 5, Temporary Income Tax Regulations under the Revenue Act of 1978, to Title 26 of the Code of Federal Regulations.

Section 301 (a) of the Revenue Act of 1978 (the Act) replaces the surtax exemption with four taxable income brackets (each of \$25,000) that will be taxed at rates less than the maximum rate of 46 percent. Section 301 (b) (19) of the Act limits the members of a controlled group of corporations to an aggregate of \$25,000 in each bracket. Section 106 of the Act provides that the amendments made by section 301 are to be treated as a change in a rate of tax.

This regulation sets forth the method of apportioning the \$50,000 surtax exemption available before January 1, 1979, and the amounts in the four taxable income brackets available after December 31, 1978, among component members for taxable years that include December 31, 1978. The regulation is based on paragraph (a) (3) of § 1.1561-2A of the Income Tax Regulations, relating to the application to members of controlled groups of the increase in the surtax exemption to \$50,000 as of January 1, 1975.

#### DRAFTING INFORMATION

The principal author of this regulation is Robert C. Graff of the Legislation and Regulations Division of the Office of Chief Counsel, Internal Revenue Service. However, personnel from other offices of the Internal Revenue Service and Treasury Department participated in developing the regulation, both on matters of substance and style.

#### WAIVER OF CERTAIN PROCEDURAL REQUIREMENTS OF FINAL TREASURY DIRECTIVE

A determination has been made by Jerome Kurtz, Commissioner of Internal Revenue, that there is need for immediate guidance in order to enable members of controlled groups of corporations to compute tax liabilities for their taxable years that include December 31, 1978. This is because sections 301 (a) and 106 of the Revenue



Act of 1978 replace the surtax exemption with four taxable income brackets, effective January 1, 1979, and section 301 (b) (19) of the Act limits members of a controlled group to an aggregate of \$25,000 in each bracket. Because of the immediate need for this regulation, compliance with the procedural requirements of paragraphs 8 through 14 of the final Treasury directive (43 FR 52121), relating to improving regulations, would be impractical and, therefore, these requirements have not been followed.

#### ADOPTION OF REGULATION

Accordingly, a new Part 5, Temporary Income Tax Regulations under the Revenue Act of 1978, is added to Title 26 of the Code of Federal Regulations and the following temporary regulation is adopted:

#### § 1.1561-1 Taxable years of component members of controlled group of corporations that include December 31, 1978.

(a) *In general.* This section prescribes a regulation for applying sections 301 (a) and (b) (19), and 106, of the Revenue Act of 1978 (the Act) in the case of certain taxable years of component members of a controlled group of corporations (as defined in section 1563 of the Internal Revenue Code). The section applies only to taxable years that include December 31, 1978, and only if the taxable year of at least one component member ends in 1979.

(b) *Background.* Section 301(a) of the Act amends section 11 of the Code (relating to tax imposed on corporations) to provide for taxable income brackets that are subject to tax at rates less than the maximum rate of 46 percent. Section 301(b)(19) of the Act amends section 1561(a) of the Code (relating to limitations on certain multiple tax benefits in the case of certain controlled corporations) to limit the component members of a controlled group to an aggregate amount in each bracket which does not exceed the maximum amount in such bracket to which a corporation which is not a component member of a controlled group is entitled. Section 106 of the Act amends section 21 of the Code (relating to effect of changes in rate of tax) to provide that the amendments made by section 301 of the Act shall be treated as a change in a rate of tax. Since the amendments made by section 301 of the Act are effective for taxable years beginning after December 31, 1978, under the amendment to section 21 the effective date of the change in rate of tax is January 1, 1979.

(c) *No apportionment plan in effect.* If no apportionment plan (see § 1.1561-3 of the Income Tax Regulations) is in effect with respect to De-

cember 31, 1978, the single \$50,000 surtax exemption available before January 1, 1979, and the single bracket amounts available after December 31, 1978, shall be equally divided among the component members of the controlled group on December 31, 1978. In the case of a controlled group which includes component members that join in the filing of a consolidated return and other component members that do not join in the filing of such a return, each component member of the group (including each component member that joins in filing the consolidated return) shall be treated as a separate corporation for purposes of equally apportioning the \$50,000 surtax exemption in effect before January 1, 1979, and the bracket amounts in effect after December 31, 1978. In such a case, the surtax exemption and bracket amounts of the corporations filing the consolidated return shall be the sum of the amount apportioned to each component member that joins in filing the consolidated return.

(d) *Apportionment plan.* (1) If one or more component members of the controlled group have a calendar taxable year and if an apportionment plan is adopted under § 1.1561-3 apportioning the entire \$50,000 surtax exemption available for 1978 to such calendar-year members, then the amount in each taxable income bracket available for fiscal-year members is zero. If only a part of the \$50,000 surtax exemption is apportioned to calendar-year members, then a proportionate part of the \$25,000 amount in each taxable income bracket is available for the fiscal-year members. For example, if \$30,000 (% of \$50,000) is apportioned to calendar-year members, % of the \$25,000 amount in each bracket, or \$10,000, as well as the remaining % of the 1978 surtax exemption, is available to the fiscal-year members.

(2) The amount in each taxable income bracket available to fiscal-year members may be apportioned among such members in any manner the controlled group may select. For example, the available amount in the first bracket (subject to a 17-percent rate) may be allocated to one member, the amount in the second bracket (subject to a 20-percent rate) may be allocated to another member, and so on. Moreover, the available amount in each

bracket may be divided among the members in any manner the group may select.

(3) In computing 1978 tentative taxes under section 21, the total surtax exemption available to fiscal-year members for 1978 must be divided among such members in the same proportion as the sum of the available amount in each bracket is divided among them. Thus, if the sum of the available bracket amounts is \$100,000 (i.e., \$25,000 in each bracket), and if corporation X is apportioned 30 percent, or \$30,000, of this amount (regardless of which brackets corporation X may select), then 30 percent of the surtax exemption available to the fiscal-year members for 1978 (i.e., 30 percent of \$50,000, or \$15,000) must be apportioned to corporation X.

(e) *Corporations affected.* The provisions of section 1561 may reduce the surtax exemption or bracket amounts of any corporation which is a component member of a controlled group of corporations and which is subject to the tax imposed by section 11, or by any other provision of subtitle A of the Code if the tax under such other provisions is computed by reference to the tax imposed by section 11. Such other provisions include, for example, sections 511(a)(1), 594, 802, 831, 852, 857, 882, 1201, and 1378.

(f) *Example.* This section may be illustrated by the following example:

*Example.* Corporations X, Y, and Z are component members of a controlled group of corporations on December 31, 1978. X has taxable income of \$10,000 for the taxable year ending December 31, 1978. Y has taxable income of \$60,000 for the taxable year ending June 30, 1979. Z has taxable income of \$90,000 for the taxable year ending September 30, 1979. The group files an apportionment plan under § 1.1561-3 apportioning \$10,000 (i.e., % of \$50,000) to X, the calendar-year member. Therefore, % of the amount in each bracket, or \$20,000, is available to Y and Z, the fiscal-year members. Under the plan, Y is apportioned the entire amount in the first bracket and \$10,000 of the amount in the second bracket. Z is apportioned \$10,000 of the amount in the second bracket and the entire amount in the third and fourth brackets. Therefore, Y is apportioned \$30,000, or % of the total available amount in the four brackets, and Z is apportioned \$50,000, or % of the total available amount. The tax liabilities of Y and Z for their taxable years ending in 1979 are computed as follows: (Computation of X's tax liability for 1978, using a surtax exemption of \$10,000, is not shown.)

#### 1979 TENTATIVE TAX

	Y
Taxable income	\$60,000
Tax on amount in first bracket: 17 percent of \$20,000	3,400
Tax on amount in second bracket: 20 percent of \$10,000	2,000
Tax on remaining income: 46 percent of \$30,000	13,800
1979 tentative tax	19,200



## 1978 TENTATIVE TAX—Continued

	Z
Taxable income	90,000
Tax on amount in second bracket: 20 percent of \$10,000	2,000
Tax on amount in third bracket: 30 percent of \$20,000	6,000
Tax on amount in fourth bracket: 40 percent of \$20,000	8,000
Tax on remaining income: 46 percent of \$40,000	18,400
1979 tentative tax	34,400

## 1978 TENTATIVE TAX

	Y
Taxable income	60,000
Normal tax:	
20 percent of \$7,500 (% of \$20,000)	1,500
22 percent of \$52,500	11,550
	13,050
Surtax:	
Taxable income	\$60,000
Surtax exemption	15,000 (% of \$40,000)
	\$45,000 × 26 percent
	11,700
1978 tentative tax	24,750

	Z
Taxable income	90,000
Normal tax:	
20 percent of \$12,500 (% of \$20,000)	2,500
22 percent of \$77,500	17,050
	19,500
Surtax:	
Taxable income	\$90,000
Surtax exemption	25,000 (% of \$40,000)
	\$65,000 × 26 percent
	16,900
1978 tentative tax	36,450

The 1978 and 1979 tentative taxes are apportioned as follows:

Corporation Y:	
1978—184/365 of \$24,750	12,477
1979—181/365 of \$19,200	9,521
Total tax for taxable year	21,998
Corporation Z:	
1978—92/365 of \$36,450	9,187
1979—273/365 of \$34,400	25,729
Total tax for taxable year	34,916

There is a need for immediate guidance with respect to the provisions contained in this Treasury decision. For this reason, it is found impracticable to issue it with notice and public procedure under subsection (b) of section 553 of Title 5 of the United States Code or subject to the effective date limitation of subsection (d) of that section.

This Treasury decision is issued under the authority contained in sec-

tion 7805 of the Internal Revenue Code of 1954 (68A Stat. 917; 26 U.S.C. 7805).

JEROME KURTZ,  
*Commissioner of Internal Revenue.*

Approved: December 21, 1978.

DONALD C. LUBICK,  
*Assistant Secretary  
of the Treasury.*

[FR Doc. 79-194 Filed 1-2-79; 8:45 am]

[3125-01-M]

## Title 40—Protection of Environment

## CHAPTER V—COUNCIL ON ENVIRONMENTAL QUALITY

## NATIONAL ENVIRONMENTAL POLICY ACT—REGULATIONS

## Implementation of Procedural Provisions; Corrections

AGENCY: Council on Environmental Quality, Executive Office of the President.

ACTION: Corrections to final regulations.

SUMMARY: On November 29, 1978 (43 FR 55978), the Council published in the FEDERAL REGISTER final regulations for the implementation of the procedural provisions of the National Environmental Policy Act. The following are corrections to the November 29 publication. Typographical errors will be corrected when the regulations are published in the Code of Federal Regulations.

EFFECTIVE DATE: July 30, 1979.

FOR FURTHER INFORMATION CONTACT:

Nicholas C. Yost, General Counsel, Council on Environmental Quality, Executive Office of the President, 722 Jackson Place, N.W., Washington, D.C. 20006 (telephone number (202) 633-7032 or (202) 395-5750).

## PART 1500—PURPOSE, POLICY, AND MANDATE

1. On page 55991, in § 1500.4(i), first line, change "programs" to "program".

## PART 1501—NEPA AND AGENCY PLANNING

2. On page 55993, in § 1501.5(e)(2), 4th line, delete the work "above".

## PART 1504—PREDECISION REFERRALS TO THE COUNCIL OF PROPOSED FEDERAL ACTIONS DETERMINED TO BE ENVIRONMENTALLY UNSATISFACTORY

3. On page 55999, in § 1504.3(h), last line, the word "Procedures" should read "Procedure".



**RULES AND REGULATIONS**

**PART 1506—OTHER REQUIREMENTS OF NEPA**

4. On page 56002, in § 1506.10(b)(2), 27th line, the word "Procedures" should read "Procedure".

**PART 1508—TERMINOLOGY AND INDEX**

5. On page 56005, in § 1508.27(a), sixth line, change the word "Significant" to "Significance".

NICHOLAS C. YOST,  
General Counsel.

[FR Doc. 79-292 Filed 1-2-79; 8:45 am]

[6820-24-M]

**Title 41—Public Contracts and Property Management**

**CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS**

**SUBCHAPTER G—TRANSPORTATION AND MOTOR VEHICLES**

[FPMR Amdt. G-48]

**PART 101-38—MOTOR EQUIPMENT MANAGEMENT**

**Subpart 101-38.6—Exemptions From Use of Official U.S. Government Tags and Other Identification**

**MOTOR VEHICLE AND TRANSPORTATION MANAGEMENT**

AGENCY: General Services Administration.

ACTION: Final rule.

SUMMARY: This amendment broadens the list of organizational activities of the Department of the Treasury to which GSA has granted unlimited exemptions from displaying U.S. Government tags and other identification. This amendment will show the full extent of the Department of the Treasury's exemptions.

EFFECTIVE DATE: January 3, 1979.

**FOR FURTHER INFORMATION CONTACT:**

Mr. John I. Tait, Director, Regulations and Management Control Division, Office of the Executive Director, Federal Supply Service, General Services Administration, Washington, DC 20406 (703-557-1914).

Section 101-38.602(n) is revised to read as follows:

§ 101-38.602 Unlimited exemptions.

(n) *Treasury, Department of the.* All motor vehicles operated by the U.S. Secret Service; Intelligence Division and Internal Security Division of the

Internal Revenue Service; Bureau of Alcohol, Tobacco, and Firearms; Office of Investigation of the U.S. Customs Service; and vehicles used for investigative purposes by the Collection Division of the Internal Revenue Service.

(Sec. 205(c), 63 Stat. 390; (40 U.S.C. 486(c)).)

Dated: December 21, 1978.

PAUL E. GOULDING,  
Acting Administrator of  
General Services.

[FR Doc. 79-282 Filed 1-2-79; 8:45 am]

[7035-01-M]

**Title 49—Transportation**

**CHAPTER X—INTERSTATE COMMERCE COMMISSION**

**SUBCHAPTER A—GENERAL RULES AND REGULATIONS**

[Amdt. No. 7 to Service Order No. 1231]

**PART 1033—CAR SERVICE**

**Consolidated Rail Corporation Authorized To Operate Over Tracks of Louisville and Nashville Railroad Co.**

AGENCY: Interstate Commerce Commission.

ACTION: Emergency Order (Amendment No. 7 to Service Order No. 1231).

SUMMARY: Service Order No. 1231 authorizes the Consolidated Rail Corporation to operate over tracks abandoned by the Louisville and Nashville Railroad at Brazil, Indiana, for the purpose of providing rail service to shippers served by those tracks. The involved tracks are to be sold to Consolidated Rail Corporation. The order is printed in full in the FEDERAL REGISTER, Volume 41 at page 8480. This amendment extends the order for six months.

DATES: *Effective 11:59 p.m., December 31, 1978. Expires 11:59 p.m., June 30, 1979.*

**FOR FURTHER INFORMATION CONTACT:**

C. C. Robinson, Chief, Utilization and Distribution Branch, Interstate Commerce Commission, Washington, D.C. 20423. Telephone (202) 275-7840, Telex 89-2742.

Decided: December 22, 1978.

Upon further consideration of Service Order No. 1231 (41 FR 8480, 15414, 27729; 42 FR 3310, 34520; 43 FR 762 and 28496), and good cause appearing therefor:

*It is ordered, that § 1033.1231 Consolidated Rail Corporation authorized to operate over tracks of Louisville and Nashville Railroad Company, Service Order No. 1231 is amended by substituting the following paragraph (f) for paragraph (f) thereof:*

(f) *Expiration date.* The provisions of this order shall expire at 11:59 p.m., June 30, 1979, unless otherwise modified, changed or suspended by order of this Commission.

*Effective date.* This amendment shall become effective at 11:59 p.m., December 31, 1978.

(49 U.S.C. (10304-10305 and 11121-11126).)

This amendment shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and car hire agreement under the terms of that agreement, and upon the American Short Line Railroad Association. Notice of this amendment shall be given to the general public by depositing a copy in the Office of the Secretary of the Commission, at Washington, D.C., and by filing a copy with the Director, Office of the Federal Register.

By the Commission, Railroad Service Board, members Joel E. Burns, Robert S. Turkington and John R. Michael. Member Joel E. Burns not participating.

NANCY L. WILSON,  
Acting Secretary.

[FR Doc. 79-180 Filed 1-2-79; 8:45 am]

[7035-01-M]

[S.O. No. 1340]

**PART 1033—CAR SERVICE**

AGENCY: Interstate Commerce Commission.

ACTION: Emergency Order Service Order, No. 1340 Denial of Appeals.

SUMMARY: On September 22, 1978, the Commission ordered the Seaboard Coast Line Railroad and other lines members of its system collectively to furnish 100 locomotives to the Louisville and Nashville Railroad Company, also a system railroad. Requests for reconsideration were filed by the Seaboard Coast Line and affiliates and by the Fertilizer Institute. Tesoro Coal Company requested that the Commission require the Louisville and Nashville to furnish weekly reports of its distribution of cars to unit-train shippers of coal. The Commission's decision, dated December 20, 1978 denies the petitions for reconsideration and the petition for expansion of the reporting requirements of Service Order No. 1340.

**FOR FURTHER INFORMATION CONTACT:**

Charles C. Robinson, Chief, Utilization and Distribution Branch, Inter-



[3125-01-M]

## Title 40—Protection of Environment

## CHAPTER V—COUNCIL ON ENVIRONMENTAL QUALITY

## NATIONAL ENVIRONMENTAL POLICY ACT—REGULATIONS

## Implementation of Procedural Provisions

AGENCY: Council on Environmental Quality, Executive Office of the President.

ACTION: Final regulations.

SUMMARY: These final regulations establish uniform procedures for implementing the procedural provisions of the National Environmental Policy Act. The regulations would accomplish three principal aims: to reduce paperwork, to reduce delays, and to produce better decisions. The regulations were issued in draft form in 43 FR 25230-25247 (June 9, 1978) for public review and comment and reflect changes made as a result of this process.

EFFECTIVE DATE: July 30, 1979. (See exceptions listed in § 1506.12.)

FOR FURTHER INFORMATION CONTACT:

Nicholas C. Yost, General Counsel, Council on Environmental Quality, Executive Office of the President, 722 Jackson Place NW., Washington, D.C. 20006 (telephone number 202-633-7032 or 202-395-5750).

## SUPPLEMENTARY INFORMATION:

## 1. PURPOSE

We are publishing these final regulations to implement the procedural provisions of the National Environmental Policy Act. Their purpose is to provide all Federal agencies with efficient, uniform procedures for translating the law into practical action. We expect the new regulations to accomplish three principal aims: To reduce paperwork, to reduce delays, and at the same time to produce better decisions which further the national policy to protect and enhance the quality of the human environment.

The Council on Environmental Quality is responsible for overseeing Federal efforts to comply with the National Environmental Policy Act ("NEPA"). In 1970, the Council issued Guidelines for the preparation of environmental impact statements (EISs) under Executive Order 11514 (1970). The 1973 revised Guidelines are now in effect. Although the Council conceived of the Guidelines as non-discretionary standards for agency decision-making, some agencies viewed them as advisory only. Similarly, courts dif-

fered over the weight which should be accorded the Guidelines in evaluating agency compliance with the statute.

The result has been an evolution of inconsistent agency practices and interpretations of the law. The lack of a uniform, government-wide approach to implementing NEPA has impeded Federal coordination and made it more difficult for those outside government to understand and participate in the environmental review process. It has also caused unnecessary duplication, delay and paperwork.

Moreover, by the terms of Executive Order 11514, the Guidelines were confined to Subsection (C) of Section 102(2) of NEPA—the requirement for environmental impact statements. The Guidelines did not address Section 102(2)'s other important provisions for agency planning and decisionmaking. Consequently, the environmental impact statement has tended to become an end in itself, rather than a means to making better decisions. Environmental impact statements have often failed to establish the link between what is learned through the NEPA process and how the information can contribute to decisions which further national environmental policies and goals.

To correct these problems, the President issued Executive Order 11991 on May 24, 1977 directing the Council to issue the regulations. The Executive Order was based on the President's Constitutional and statutory authority, including NEPA, the Environmental Quality Improvement Act, and Section 309 of the Clean Air Act. The President has a constitutional duty to insure that the laws are faithfully executed (U.S. Const. art. II, sec. 3), which may be delegated to appropriate officials. (Title 3 U.S.C., Sec. 301). In signing Executive Order 11991, the President delegated this authority to the agency created by NEPA, the Council on Environmental Quality.

In accordance with this directive, the Council's regulations are binding on all Federal agencies, replace some seventy different sets of agency regulations, and provide uniform standards applicable throughout the Federal government for conducting environmental reviews. The regulations also establish formal guidance from the Council on the requirements of NEPA for use by the courts in interpreting this law. The regulations address all nine subdivisions of Section 102(2) of the Act, rather than just the EIS provision covered by the Guidelines. Finally, as mandated by President Carter's Executive Order, the regulations are

... designed to make the environmental impact statement more useful to decisionmakers and the public; and to reduce paperwork and the accumulation of ex-

traneous background data, in order to emphasize the need to focus on real environmental issues and alternatives."

## 2. SUMMARY OF MAJOR INNOVATIONS IN THE REGULATIONS

Following this mandate in developing the new regulations, we have kept in mind the threefold objective of less paperwork, less delay, and better decisions.

## A. REDUCING PAPERWORK

These regulations reduce paperwork requirements on agencies of government. Neither NEPA nor these regulations impose paperwork requirements on the public.

i. *Reducing the length of environmental impact statements.* Agencies are directed to write concise EISs (§ 1502.2(c)), which normally shall be less than 150 pages, or, for proposals of unusual scope or complexity, 300 pages (§ 1502.7).

ii. *Emphasizing real alternatives.* The regulations stress that the environmental analysis is to concentrate on alternatives, which are the heart of the process (§§ 1502.14, 1502.16); to treat peripheral matters briefly (§ 1502.2(b)); and to avoid accumulating masses of background data which tend to obscure the important issues (§§ 1502.1, 1502.15).

iii. *Using an early "scoping" process to determine what the important issues are.* A new "scoping" procedure is established to assist agencies in deciding what the central issues are, how long the EIS shall be, and how the responsibility for the EIS will be allocated among the lead agency and cooperating agencies (§ 1501.7). The scoping process is to begin as early in the NEPA process as possible—in most cases, shortly after the decision to prepare an EIS—and shall be integrated with other planning.

iv. *Using plain language.* The regulations strongly advocate writing in plain language (§ 1502.8).

v. *Following a clear format.* The regulations recommend a standard format intended to eliminate repetitive discussion, stress the major conclusions, highlight the areas of controversy, and focus on the issues to be resolved (§ 1502.10).

vi. *Requiring summaries of environmental impact statements.* The regulations are intended to make the document more usable by more people (§ 1502.12). With some exceptions, a summary may be circulated in lieu of the environmental impact statement if the latter is unusually long (§ 1502.19).

vii. *Eliminating duplication.* Under the regulations Federal agencies may prepare EISs jointly with State and local units of government which have "little NEPA" requirements (§ 1506.2).